

UST Sites: Six (6) UST sites are located within the 0.5 mile search radius. The nearest UST site, Dover Marathon, 7995 SR 32 West (AI ID 1951), is incorrectly mapped east of the Passing Lane 3 project area. The site is actually located approximately 0.29 mile west of the Passing Lane 3 project area, in the southeast quadrant of the SR 32 and SR 75 intersection. The station was closed and four (4) USTs were removed in the early 1990's. There is no indication that a release has occurred at this facility. No impact is expected.

Voluntary Remediation Program: One (1) Voluntary Remediation Program site is located within the 0.5 mile search radius. The Voluntary Remediation Program site is located approximately 1.9 miles southeast of the Passing Lane 4 project area. No impact is expected.

LUST Sites: Five (5) LUST sites are located within the 0.5 mile search radius. The nearest LUST site, JD Marathon, 8025 West SR 32 (AI ID 4805), is located approximately 0.30 mile west of the Passing lane 3 project area. Petroleum contamination in the soil and groundwater was discovered during a property transaction in 2006. According to the No Further Action (NFA) Determination issued by IDEM on September 26, 2006, low levels of contamination remains on site at depths ranging from 4 to 6 feet bgs. On June 27, 2019 a suspected release was reported to IDEM. A limited Subsurface Investigation was completed on January 10, 2020. The limited Subsurface Investigation concluded that the extent of subsurface petroleum contamination appears to be minimal and sufficiently delineated. Contamination does not appear to migrate off site. No impact is expected.

Institutional Controls: One (1) Institutional Controls site is located within the 0.5 mile search radius. The Institutional Controls site is located approximately 1.9 miles southeast of the Passing Lane 4 project area. No impact is expected.

National Pollutant Discharge Elimination System (NPDES) Facilities: Eight (8) NPDES facilities are located within the 0.5 mile search radius. The nearest NPDES facility is, Western Boone Junior-Senior High School Track and Renovations, 1205 SR 75 (AI ID 123849), is located adjacent to the north of the Passing Lane 3 project area. The permit is in effect until April 8, 2024. Coordination with Western Boone Junior-Senior High School will occur.

NPDES Pipe Locations: One (1) NPDES pipe is located within the 0.5 mile search radius. The NPDES pipe, Western Boone Junior-Senior High School, is located approximately 0.30 mile north of the Passing Lane 3 project area. Coordination with Western Boone Junior-Senior High School will occur.

ECOLOGICAL INFORMATION SUMMARY

The Boone County listing of the Indiana Natural Heritage Data Center information on endangered, threatened, or rare (ETR) species and high quality natural communities can be found at the following link: https://www.in.gov/dnr/naturepreserve/files/np_boone.pdf. A preliminary review of the Indiana Natural Heritage Database by INDOT Environmental Services did indicate the presence of ETR species within the 0.5 mile search radius. Coordination with the United States Fish and Wildlife Service (USFWS) and IDNR will occur.

A review of the USFWS database did not indicate the presence of endangered bat species in or within 0.5 mile of the project area. The project area is located in a rural area surrounded by farm fields with some residential and commercial properties. The June 11, 2020, inspection report for Culvert 032-006-53.38 and the June 15, 2020, inspection report for Culvert 032-006-57.29 state that no evidence of bats was seen or heard in the culverts. The range-wide programmatic consultation for the Indiana Bat and Northern Long-eared Bat will be completed according to the most recent "Using the USFWS's IPaC System for Listed Bat Consultation for INDOT Projects".

RECOMMENDATIONS SECTION

Include recommendations from each section. If there are no recommendations, please indicate N/A:

INFRASTRUCTURE:

Recreational Facilities: One (1) recreational facility, Western Boone Junior-Senior High School, is located adjacent to the north of the Passing Lane 3 project area in the northeast quadrant of the SR 32 and SR 75 intersection. Coordination with Western Boone Junior-Senior High School will occur.

Cemeteries: One (1) cemetery, Dover Cemetery, is located approximately 0.05 mile west of the Passing Lane 3 project area, in the northeast quadrant of the SR 32 and SR 75 intersection. A Cemetery Development Plan may be required if this project is within 100 feet of the cemetery. Coordination with INDOT Cultural Resources will occur.

Schools: One (1) school, Western Boone Junior-Senior High School, is located adjacent to the north of the Passing Lane 3 project area, in the northeast quadrant of the SR 32 and SR 75 intersection. Coordination with Western Boone Junior-Senior High School will occur.

WATER RESOURCES: The presence of the following water resources will require the preparation of a Waters of the US Report and coordination with INDOT ESD Ecology and Waterway Permitting.

- Three (3) NWI-Wetland polygons are located adjacent to the project area; One (1) NWI-Wetland polygon is located adjacent to the south of the Passing Lane 1 project area, and two (2) NWI-Wetland polygons are located adjacent to the south of the Passing Lane 3 project area.
- Three (3) stream segments are located adjacent to the Passing Lane project areas; One (1) stream segment is located adjacent to the east of the Passing Lane 1 project area, and two (2) stream segments are located adjacent to the Passing Lane 3 project area (one (1) to the east and one (1) to the west).
- Due to the presence of the two (2) culverts and various drainage pipes, there is a potential for unmapped water features within the project area (coordination only).

MINING/MINERAL EXPLORATION:

Petroleum Wells: One (1) petroleum well (presumed plugged) is located adjacent to the north of the Passing Lane 4 project area. Coordination with Indiana Department of Natural Resources (IDNR) Oil and Gas Division will occur.

HAZMAT CONCERNS:

NPDES Facility: Western Boone Junior-Senior High School Track and Renovations, 1205 SR 75 (AI ID 123849), is located adjacent to the north of the Passing Lane 3 project area. The permit is in effect until April 8, 2024. Coordination with Western Boone Junior-Senior High School will occur.

NPDES Pipe Locations: Western Boone Junior-Senior High School is located approximately 0.30 mile north of the Passing Lane 3 project area. Coordination with Western Boone Junior-Senior High School will occur.

ECOLOGICAL INFORMATION: Coordination with USFWS and IDNR will occur. The range-wide programmatic consultation for the Indiana Bat and Northern Long-eared Bat will be completed according to the most recent "Using the USFWS's IPaC System for Listed Bat Consultation for INDOT Projects".

Nicole Fohey-
Breting

Digitally signed by
Nicole Fohey-Breting
Date: 2021.12.21
04:50:29 -05'00'

INDOT ESD concurrence: _____ (Signature)

Prepared by:



Cameron Fraser
NEPA Specialist
RQAW Corporation

Graphics:

A map for each report section with a 0.5 mile search radius buffer around all project area(s) showing all items identified as possible items of concern is attached. If there is not a section map included, please change the YES to N/A:

SITE LOCATION: YES

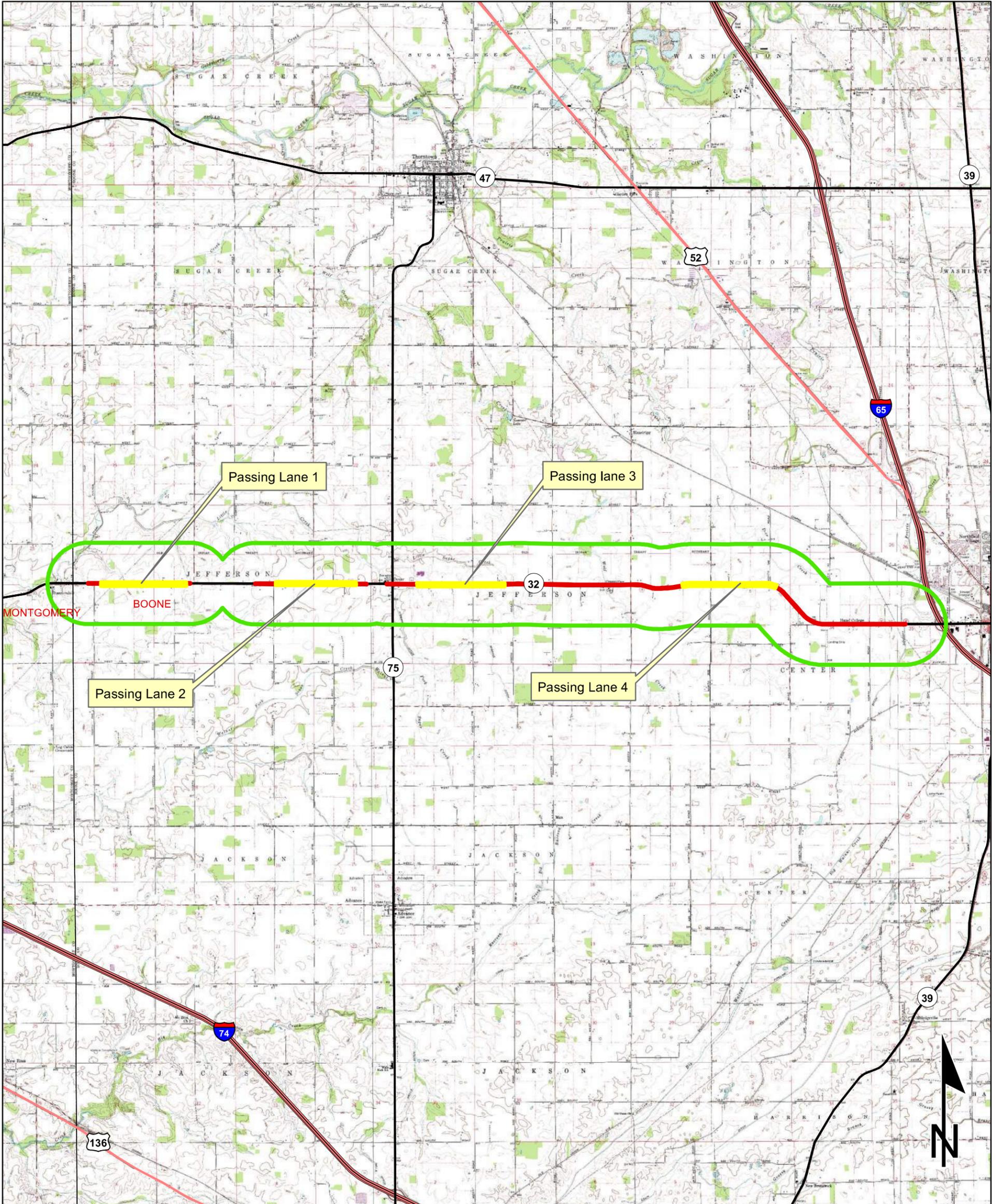
INFRASTRUCTURE: YES

WATER RESOURCES: YES

MINING/MINERAL EXPLORATION: YES

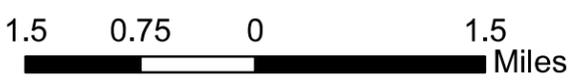
HAZMAT CONCERNS: YES

Red Flag Investigation - Site Location
SR 32, 3.69 Miles West of SR 75 to 0.5 Mile West of I-65
Des. No. 1800060 and 1900361, Passing Lane and Minor Structure Overlay
Boone County, Indiana



Sources:
Non Orthophotography
Data - Obtained from the State of Indiana Geographical Information Office Library
Orthophotography - Obtained from Indiana Map Framework Data (www.indianamap.org)
Map Projection: UTM Zone 16 N **Map Datum:** NAD83

This map is intended to serve as an aid in graphic representation only. This information is not warranted for accuracy or other purposes.



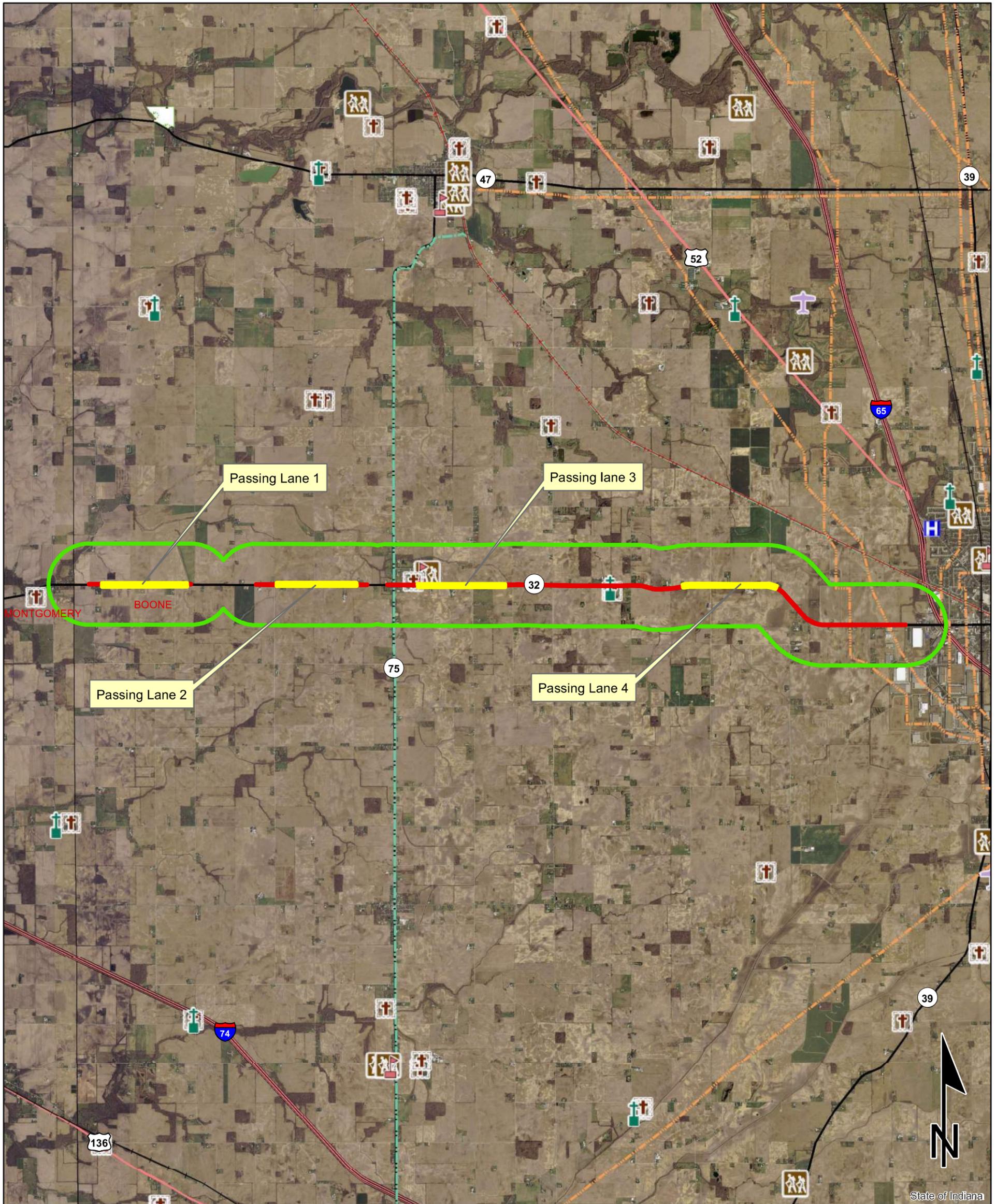
**LEBANON, HAZELRIGG, &
 SHANNONDALE
 QUADRANGLES
 INDIANA
 7.5 MINUTE SERIES**

Red Flag Investigation - Infrastructure

SR 32, 3.69 Miles West of SR 75 to 0.5 Mile West of I-65

Des. No. 1800060 and 1900361, Passing Lane and Minor Structure Overlay

Boone County, Indiana



Sources: 1.5 0.75 0 1.5 Miles
Non Orthophotography

Data - Obtained from the State of Indiana Geographical Information Office Library

Orthophotography - Obtained from Indiana Map Framework Data (www.indianamap.org)

Map Projection: UTM Zone 16 N Map Datum: NAD83

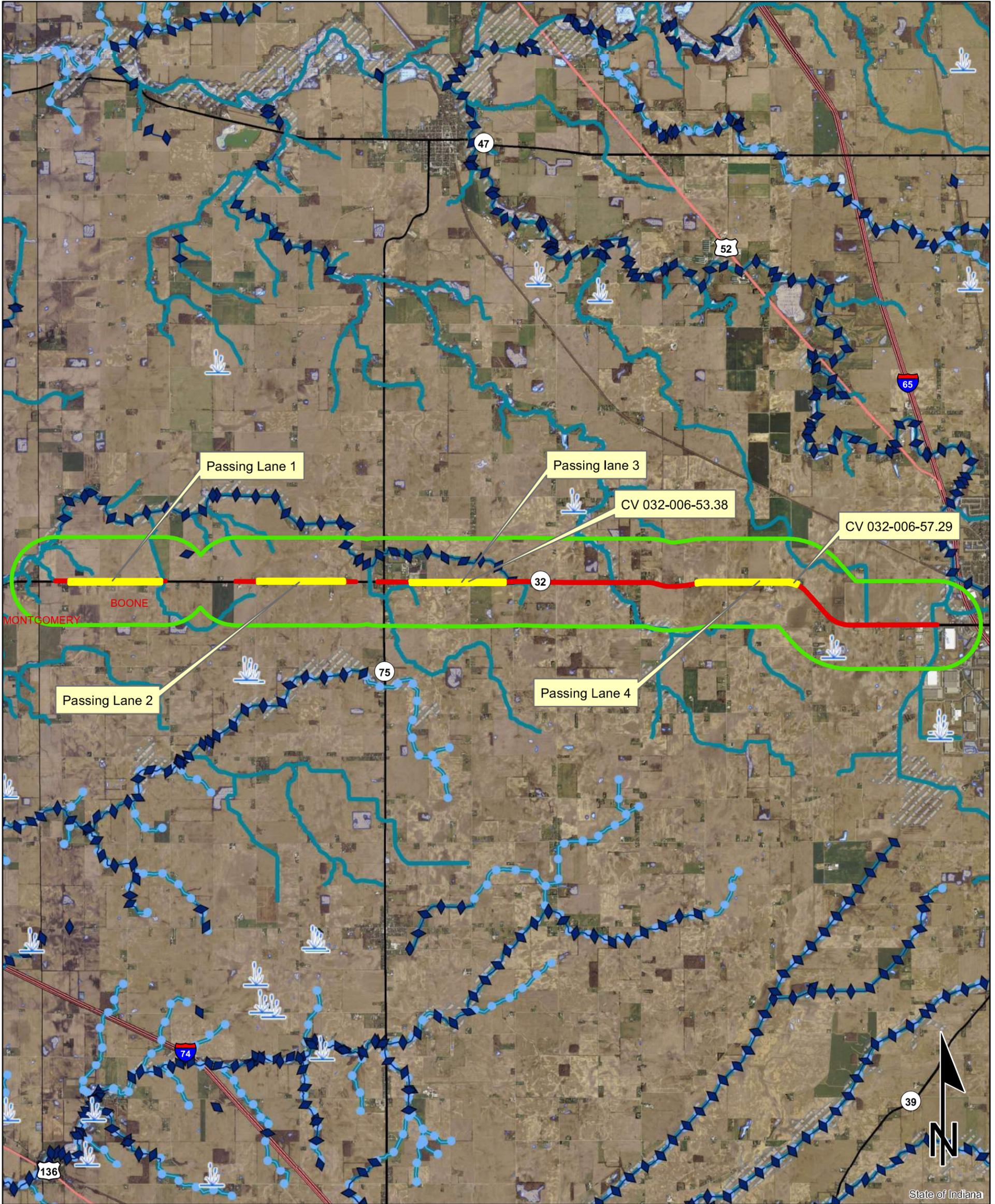
This map is intended to serve as an aid in graphic representation only. This information is not warranted for accuracy or other purposes.

	Religious Facility		Recreation Facility		Project Area
	Airport		Pipeline		Half Mile Radius
	Cemeteries		Railroad		Toll
	Hospital		Trails		Interstate
	School		Managed Lands		State Route
			County Boundary		US Route
					Local Road

Red Flag Investigation - Water Resources

SR 32, 3.69 Miles West of SR 75 to 0.5 Mile West of I-65

Des. No. 1800060 and 1900361, Passing Lane and Minor Structure Overlay Boone County, Indiana



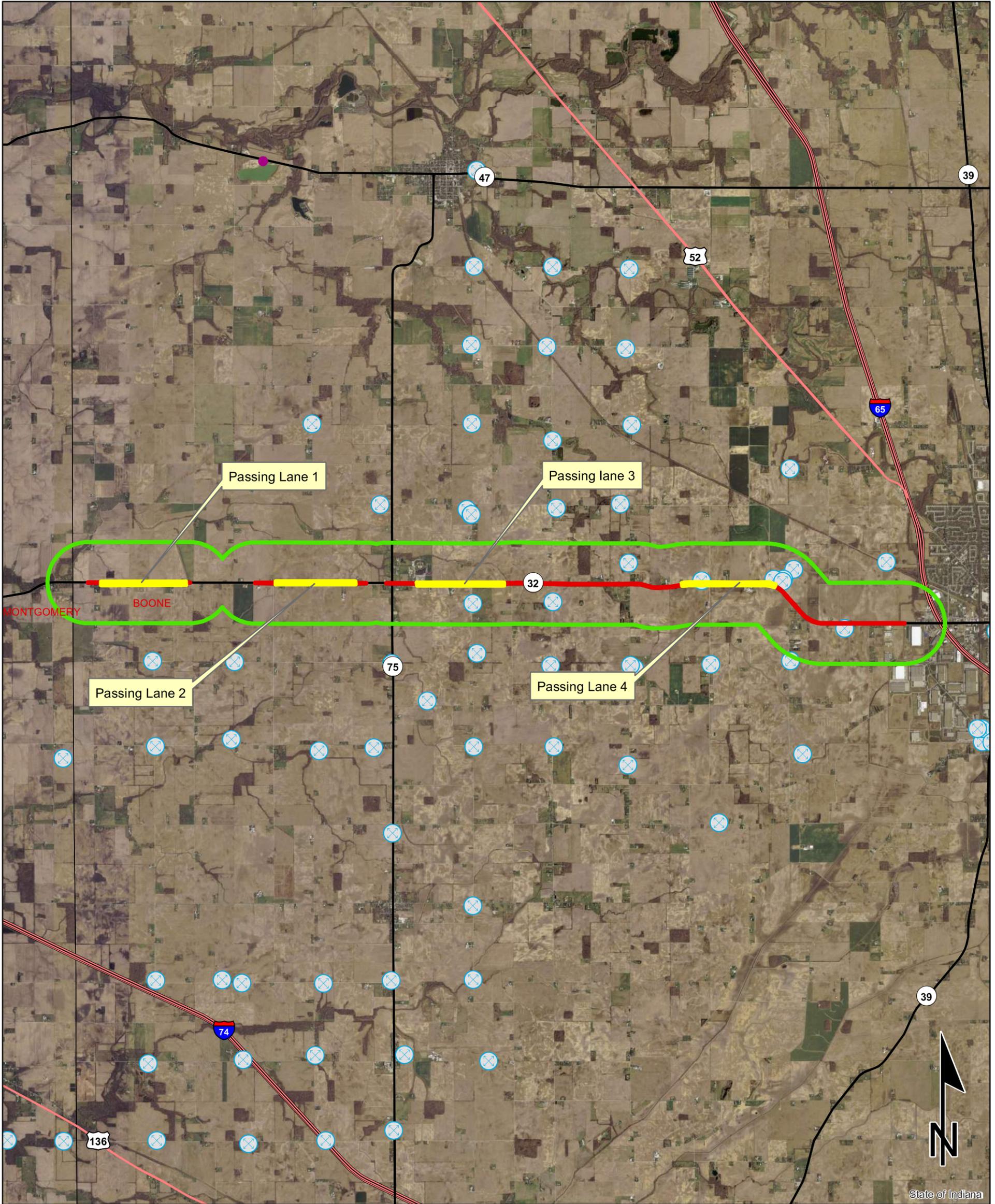
Sources:
Non Orthophotography Data - Obtained from the State of Indiana Geographical Information Office Library
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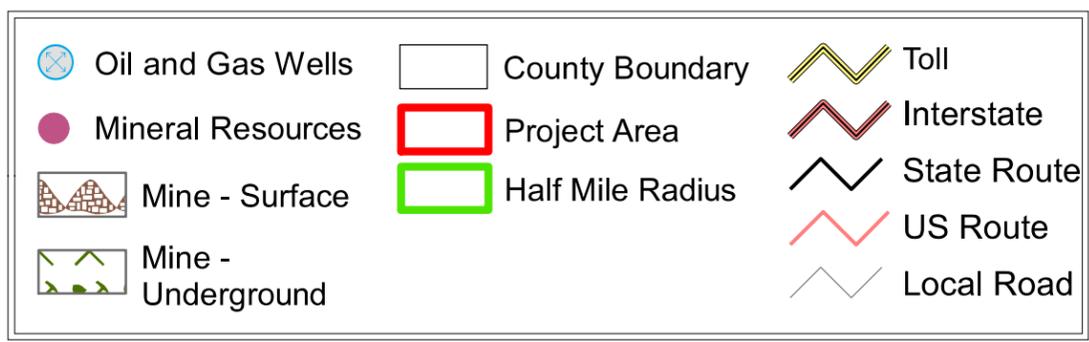
NWI - Point	Wetlands	Project Area
Karst Spring	Lake	Half Mile Radius
NWI - Line	Floodplain - DFIRM	Toll
Impaired_Stream_Lake	Cave Entrance Density	Interstate
NPS NRI listed	Sinkhole Area	State Route
River	Sinking-Stream Basin	US Route
Canal Structure - Historic	County Boundary	Local Road
Canal Route - Historic		

Red Flag Investigation - Mining and Mineral Exploration
SR 32, 3.69 Miles West of SR 75 to 0.5 Mile West of I-65
Des. No. 1800060 and 1900361, Passing Lane and Minor Structure Overlay
Boone County, Indiana



Sources:
Non Orthophotography
 Data - Obtained from the State of Indiana Geographical Information Office Library
Orthophotography - Obtained from Indiana Map Framework Data (www.indianamap.org)
Map Projection: UTM Zone 16 N **Map Datum:** NAD83

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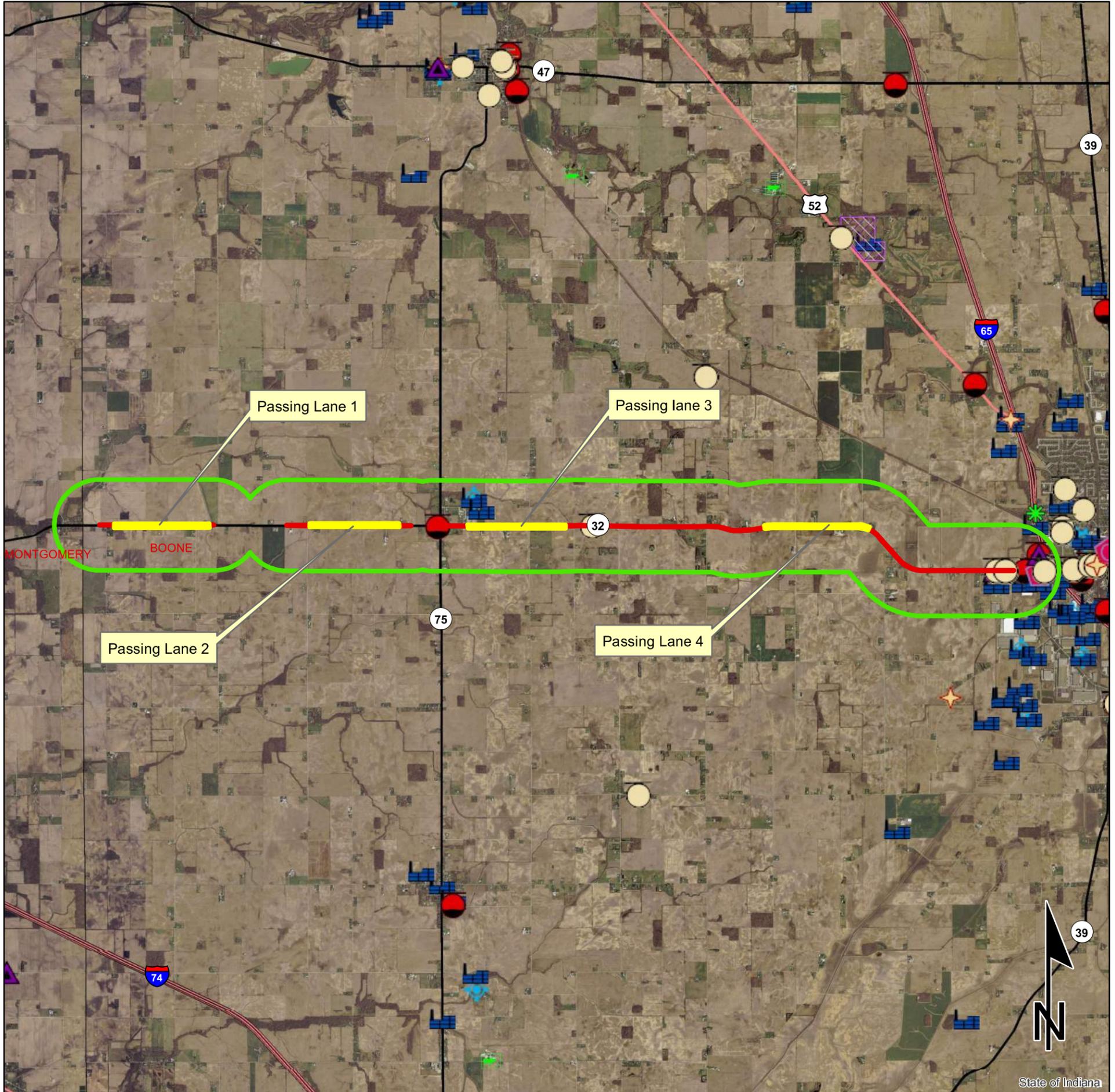


Red Flag Investigation - Hazardous Material Concerns

SR 32, 3.69 Miles West of SR 75 to 0.5 Mile West of I-65

Des. No. 1800060 and 1900361, Passing Lane and Minor Structure Overlay

Boone County, Indiana



	Brownfield		RCRA Generator/TSD		Institutional Controls
	RCRA Corrective Action Sites		Restricted Waste Site		County Boundary
	Confined Feeding Operation		Septage Waste Site		Project Area
	Notice_of_Contamination		Solid Waste Landfill		Half Mile Radius
	Construction/Demolition Site		State Cleanup Site		Toll
	Infectious/Medical Waste Site		Superfund		Interstate
	Leaking Underground Storage Tank		Tire Waste Site		State Route
	Manufactured Gas Plant		Underground Storage Tank		US Route
	NPDES Facilities		Voluntary Remediation Program		Local Road
	NPDES Pipe Locations		Waste Transfer Station		
	Open Dump Waste Site				



This map is intended to serve as an aid in graphic representation only. This information is not warranted for accuracy or other purposes.

Sources:
Non Orthophotography
Data - Obtained from the State of Indiana Geographical Information Office Library
Orthophotography - Obtained from Indiana Map Framework Data (www.indianamap.org)
Map Projection: UTM Zone 16 N **Map Datum:** NAD83



INDIANA DEPARTMENT OF TRANSPORTATION

100 North Senate Avenue
Room N758-ES
Indianapolis, Indiana 46204

PHONE: (855) 463-6848
(855) INDOT4U

Eric Holcomb, Governor
Joe McGuinness, Commissioner

Date: December 20, 2021

To: Site Assessment & Management (SAM)
Environmental Policy Office - Environmental Services Division (ESD)
Indiana Department of Transportation
100 N Senate Avenue, Room N758-ES
Indianapolis, IN 46204

From: Cameron Fraser
RQAW Corporation
8770 North Street; Suite 110
Fishers, Indiana 46038
cfraser@rqaw.com

Please note that the scope has been reduced from 4 passing lanes to 3 passing lanes. (Two EB and 1 WB).

Re: LIMITED RED FLAG INVESTIGATION (Part 2 of 2)
Des. Number 1800060 and 1900361, State Project
Passing Lanes and Minor Structural Overlay
State Road (SR) 32, from 3.69 mile West of SR 75 to 0.5 mile West of Interstate (I)-65
Boone County, Indiana

PROJECT DESCRIPTION

Brief Description of Project: The Federal Highway Administration (FHWA) and Indiana Department of Transportation (INDOT), Crawfordsville District propose to proceed with a passing lanes and minor structural overlay project on SR 32 from 3.69 miles west of SR 75 to 0.5 mile west of I-65 in Boone County, Indiana. The proposed project will involve a Hot Mix Asphalt (HMA) Minor Structural Overlay (from 0.05 mile west of the SR 75 junction to 0.5 mile west of I-65), the construction of four (4) passing lane locations, replacement of drainage pipes within the four (4) passing lane areas, and drainage ditch regrading. Refer to the RFI Part 1 of 2 for full project description. Coordination with INDOT SAM occurred on May 7, 2021, and it was determined that a limited RFI should be prepared for the drainage ditch work portion of this project.

This Limited RFI will cover the drainage ditch regrading work only. The four (4) passing lane sections of this project and the small structure replacements will receive a full resource evaluation, completed in a separate RFI (Part 1 of 2). The HMA overlay is covered under the Programmatic Categorical Exclusion (PCE) dated February 2, 2012. Therefore, resource evaluation of this work is not necessary.

Bridge Work Included in Project: Yes No Structure #(s) _____

If this is a bridge project, is the bridge Historical? Yes No , Select Non-Select

(Note: If the project involves a historical bridge, please include the bridge information in the Recommendations Section of the report).

Culvert Work Included in Project: Yes No Structure #(s) _____

Proposed right of way: Temporary # Acres To Be Determined (TBD), Permanent # Acres TBD, Not Applicable

Type of excavation: The depth of excavation required for the ditch regrading work will not exceed 1 foot bgs.
 Maintenance of traffic (MOT): A flagging operation will be used to complete the minor structural overlay and ditch regrading.

Work in waterway: Yes No Below ordinary high water mark: Yes No

State Project: LPA:

Any other factors influencing recommendations: Due to the nature of the project (work within the drainage ditch), coordination with INDOT ESD Ecology and Waterway Permitting will occur.

HAZARDOUS MATERIAL CONCERNS TABLE AND SUMMARY

Hazardous Material Concerns			
Indicate the number of items of concern found within the 0.5 mile search radius. If there are no items, please indicate N/A:			
Superfund	N/A	Manufactured Gas Plant Sites	N/A
RCRA Generator/ TSD	N/A	Open Dump Waste Sites	N/A
RCRA Corrective Action Sites	N/A	Restricted Waste Sites	N/A
State Cleanup Sites	2	Waste Transfer Stations	N/A
Septage Waste Sites	N/A	Tire Waste Sites	N/A
Underground Storage Tank (UST) Sites	6	Confined Feeding Operations (CFO)	N/A
Voluntary Remediation Program	1	Brownfields	N/A
Construction Demolition Waste	N/A	Institutional Controls	1
Solid Waste Landfill	N/A	NPDES Facilities	8
Infectious/Medical Waste Sites	N/A	NPDES Pipe Locations	1
Leaking Underground Storage Tank (LUST) Sites	5	Notice of Contamination Sites	N/A

Unless otherwise noted, site specific details presented in this section were obtained from documents reviewed on the Indiana Department of Environmental Management (IDEM) Virtual File Cabinet (VFC).

Explanation: This Limited RFI is being generated due to the proposed excavation activities within the drainage ditches:

State Cleanup Sites: Two (2) State Cleanup sites are located within the 0.5 mile search radius. The nearest state cleanup site, Lees INN, 1245 West SR 32 (AI ID 7003), is incorrectly mapped within the eastern portion of the project area. The site is actually located approximately 0.24 mile east of the project area. This site is also listed as a Voluntary Remediation Site with institutional controls. Refer to the Voluntary Remediation Program and institutional Controls sections below for more details.

UST Sites: Six (6) UST sites are located within the 0.5 mile search radius. Three (3) UST Sites are located within the vicinity of the project area.

Dover Marathon, 7995 SR 32 West (AI ID 1951), is incorrectly mapped within the project area, approximately 1.6 mile east of the SR 32 and SR 75 intersection. The site is actually located adjacent to the project area, in the southeast quadrant of the SR 32 and SR 75 intersection. The station was closed, and four (4) USTs were removed in the early 1990’s. There is no closure documentation available. Based on the proposed depth of excavation (i.e. 1 ft-bgs), no impact is expected; however, if the depth of excavation should change, coordination with INDOT SAM will occur.

Shell Oil Lebanon Westside Station, 1230 West SR 32 (AI ID 2543), is incorrectly mapped within the east portion of the project area. The site is actually located approximately 0.30 mile east of the project area. IDEM issued a UST Inspection on December 1, 2020, and the facility was found to be out of compliance with equipment, operating, and maintenance requirements set forth in Indiana's UST Rule 329 IAC 9. IDEM issued a Return to Compliance Letter for the site on January 28, 2021. No impact is expected.

Parker Hannifin Corporation, 1515 West South Street (AI ID 1473), is incorrectly mapped within the east portion of the project area. The site is actually located outside of the 0.5 mile search radius to the east. No impact is expected.

Siess Duff Company Incorporated, 1524 West South Street (AI ID 2547), is incorrectly mapped within the east portion of the project area. The site is actually located outside of the 0.5 mile search radius to the east. No impact is expected.

Voluntary Remediation Program Sites: One (1) Voluntary Remediation Program site is located within the 0.5 mile search radius. Lees INN, 1245 West State Road 32 (AI ID 7003), is located approximately 0.24 mile east of the project area. IDEM issued a Certificate of Completion letter for the site on February 7, 2011. Low levels of soil and groundwater contamination remain on the site but does not extend to the project area. No impact is expected.

LUST Sites: Five (5) LUST sites are located within the 0.5 mile search radius. Two (2) LUST sites are located within the vicinity of the project area.

JD Marathon, 8025 West SR 32 (AI ID 4805) is located adjacent to the south of the project area project area, in the southwest quadrant of the SR 32 and SR 75 intersection. Petroleum contamination in the soil and groundwater was discovered during a property transaction in 2006. According to the No Further Action (NFA) Determination issued by IDEM on September 26, 2006, low levels of contamination remains on site at depths ranging from 4 to 6 feet bgs. On June 27, 2019 a suspected release was reported to IDEM. A limited Subsurface Investigation was completed on January 10, 2020. The limited Subsurface Investigation concluded that the extent of subsurface petroleum contamination appears to be minimal and sufficiently delineated. Contamination does not appear to migrate off site. No impact is expected.

Beason's Muffler Center, 1325 West South Street (AI ID 5236), is incorrectly mapped approximately 0.10 mile east of the project area. The site is actually located outside of the 0.5 mile search radius to the east. No impact is expected.

Institutional Controls: One (1) Institutional Controls site is located within the 0.5 mile search radius. Lees INN, 1245 West State Road 32 (AI ID 7003), is located approximately 0.24 mile east of the project area. An ERC was filed for record in Boone County on January 14, 2011. No impact is expected.

National Pollutant Discharge Elimination System (NPDES) Facilities: Eight (8) NPDES Facilities are located within the 0.5 mile search radius. One (1) NPDES facility is located within the vicinity of the project area. Western Boone Junior-Senior High School Track and Renovations, 1205 SR 75 (AI ID 123849), is located adjacent to the north of the project area, in the northeast quadrant of the SR 32 and SR 75 intersection. The permit is in effect until April 8, 2024. Coordination with Western Boone Junior-Senior High School will occur.

NPDES Pipe Locations: One (1) NPDES Pipe is located within the 0.5 mile search radius. The NPDES pipe, Western Boone Junior-Senior High School, is located approximately 0.30 mile north of the project area. Coordination with Western Boone Junior-Senior High School will occur.

ECOLOGICAL INFORMATION SUMMARY

The Boone County listing of the Indiana Natural Heritage Data Center information on endangered, threatened, or rare (ETR) species and high quality natural communities can be found at the following link: https://www.in.gov/dnr/naturepreserve/files/np_boone.pdf. A preliminary review of the Indiana Natural Heritage Database by INDOT Environmental Services did indicate the presence of ETR species within the 0.5 mile search radius. Coordination with the United States Fish and Wildlife Service (USFWS) and Indiana Department of Natural Resources (IDNR) will occur.

A review of the USFWS database did not indicate the presence of endangered bat species in or within 0.5 mile of the project area. The project area is located in a rural area surrounded by farm fields with some residential and commercial properties. The range-wide programmatic consultation for the Indiana Bat and Northern Long-eared Bat will be completed according to the most recent "Using the USFWS's IPaC System for Listed Bat Consultation for INDOT Projects".

RECOMMENDATIONS SECTION

Include recommendations from each section. If there are no recommendations, please indicate N/A:

Due to the nature of the project (work within the drainage ditch), coordination with INDOT ESD Ecology and Waterway Permitting will occur.

HAZMAT CONCERNS:

UST Sites: Dover Marathon, 7995 SR 32 West (AI ID 1951), is incorrectly mapped within the project area, approximately 1.6 mile east of the SR 32 and SR 75 intersection. The site is actually located adjacent to the project area, in the southeast quadrant of the SR 32 and SR 75 intersection. The station was closed, and four (4) USTs were removed in the early 1990's. There is no closure documentation available. Based on the proposed depth of excavation (i.e. 1 ft-bgs), no impact is expected; however, if the depth of excavation should change, coordination with INDOT SAM will occur.

NPDES Facility: Western Boone Junior-Senior High School Track and Renovations, 1205 SR 75 (AI ID 123849), is located adjacent to the north of the project area, in the northeast quadrant of the SR 32 and SR 75 intersection. The permit is in effect until April 8, 2024. Coordination with Western Boone Junior-Senior High School will occur.

NPDES Pipe Locations: Western Boone Junior-Senior High School is located approximately 0.30 mile north of the project area. Coordination with Western Boone Junior-Senior High School will occur.

ECOLOGICAL INFORMATION: Coordination with USFWS and IDNR will occur. The range-wide programmatic consultation for the Indiana Bat and Northern Long-eared Bat will be completed according to the most recent "Using the USFWS's IPaC System for Listed Bat Consultation for INDOT Projects".

Nicole Fohey-
Breting

Digitally signed by
Nicole Fohey-Breting
Date: 2021.12.21
04:53:16 -05'00'

INDOT ESD concurrence: _____ (Signature)

Prepared by:



Cameron Fraser
NEPA Specialist
RQAW Corporation

Graphics:

A map for each report section with a 0.5 mile search radius buffer around all project area(s) showing all items identified as possible items of concern is attached. If there is not a section map included, please change the YES to N/A:

SITE LOCATION: YES

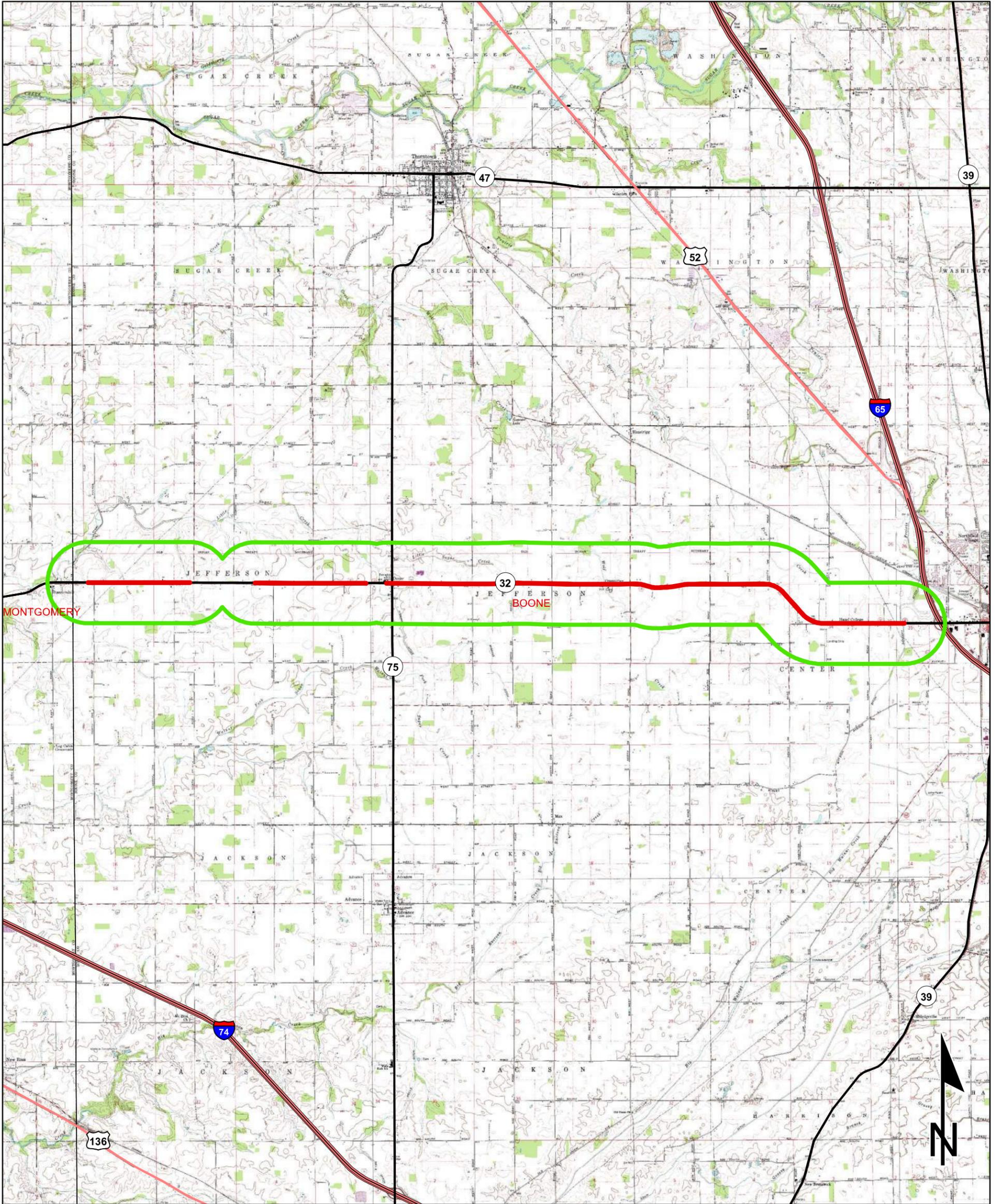
INFRASTRUCTURE: N/A

WATER RESOURCES: N/A

MINING/MINERAL EXPLORATION: N/A

HAZMAT CONCERNS: YES

Limited Red Flag Investigation - Site Location
 SR 32, 3.69 Miles West of SR 75 to 0.5 Mile West of I-65
 Des. No. 1800060 and 1900361, Passing Lane and Minor Structure Overlay
 Boone County, Indiana



Sources: 1.5 0.75 0 1.5 Miles
Non Orthophotography
Data - Obtained from the State of Indiana Geographical Information Office Library
Orthophotography - Obtained from Indiana Map Framework Data (www.indianamap.org)
Map Projection: UTM Zone 16 N **Map Datum:** NAD83
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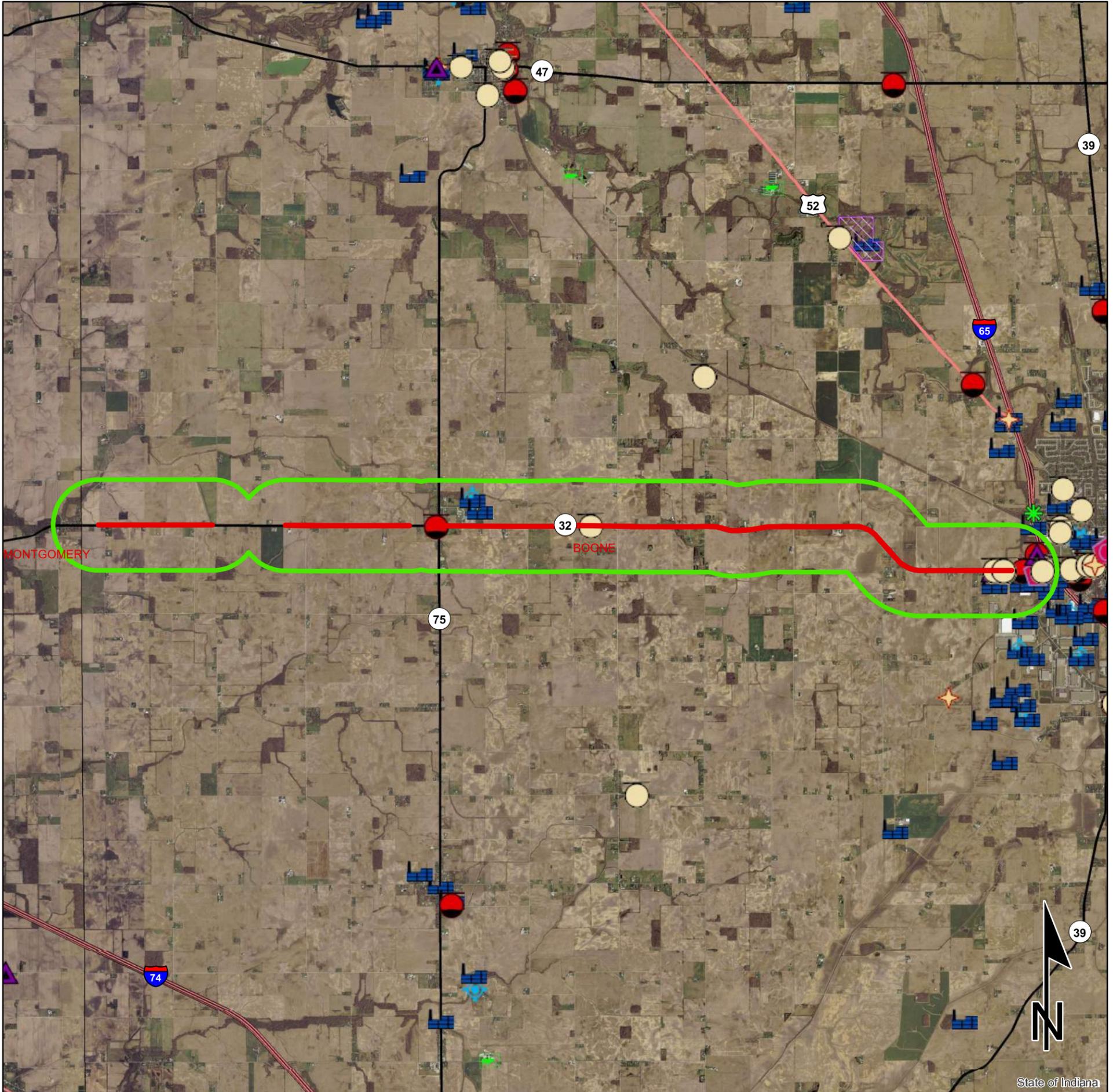
LEBANON, HAZELRIGG, &
 SHANNONDALE
 QUADRANGLES
 INDIANA
 7.5 MINUTE SERIES

Limited Red Flag Investigation - Hazardous Material Concerns

SR 32, 3.69 Miles West of SR 75 to 0.5 Mile West of I-65

Des. No. 1800060 and 1900361, Passing Lane and Minor Structure Overlay

Boone County, Indiana



	Brownfield		RCRA Generator/TSD		Institutional Controls
	RCRA Corrective Action Sites		Restricted Waste Site		County Boundary
	Confined Feeding Operation		Septage Waste Site		Project Area
	Notice_of_Contamination		Solid Waste Landfill		Half Mile Radius
	Construction/Demolition Site		State Cleanup Site		Toll
	Infectious/Medical Waste Site		Superfund		Interstate
	Leaking Underground Storage Tank		Tire Waste Site		State Route
	Manufactured Gas Plant		Underground Storage Tank		US Route
	NPDES Facilities		Voluntary Remediation Program		Local Road
	NPDES Pipe Locations		Waste Transfer Station		
	Open Dump Waste Site				



This map is intended to serve as an aid in graphic representation only. This information is not warranted for accuracy or other purposes.

Sources:

Non Orthophotography

Data - Obtained from the State of Indiana Geographical Information Office Library

Orthophotography - Obtained from Indiana Map Framework Data (www.indianamap.org)

Map Projection: UTM Zone 16 N **Map Datum:** NAD83

Harlan Ford

From: INDOT esd.sam <esd.sam@indot.IN.gov>
Sent: Tuesday, March 8, 2022 2:55 PM
To: Cameron Fraser
Cc: Harlan Ford; Aaron Lawson
Subject: [EXT] RE: ATTN: Nicole Fohey-Breting; SR 32 Roadway Improvements Project in Boone County (DES 1800060 and 1900361)

**** Please use caution this is an externally originating email. ****

Do not click on links or open attachments unless you recognize the sender and know the contents is safe.

Hi Cameron –

Thank you for the updated information regarding Des No. 1800060 and 190361. The update from 1 ft-bgs to 2 ft-bgs of excavation should not be an issue or require additional investigation at the location detailed in the attachment. Including the updated depth of excavation within the CE document appears appropriate, the update does not require an RFI Addendum.

Thank you!

Sincerely,

Nicole

Nicole Fohey-Breting

Site Assessment & Management (SAM) Team Lead

100 North Senate Avenue N758-ES

Indianapolis, Indiana 46204

Office: (317) 416-7084

Email: NFoheyBreting@indot.in.gov

Office Hours: 8 to 4 PM



The Site Assessment and Management (SAM) Manual can be found at

<https://www.in.gov/indot/engineering/environmental-services/environmental-policy/site-assessment-and-management/>

Be sure to refer to the updated information in the SAM Manual for document preparation and submission.

From: Cameron Fraser <cfraser@rqaw.com>

Sent: Monday, March 7, 2022 10:08 AM

To: INDOT esd.sam <esd.sam@indot.IN.gov>

Cc: Harlan Ford <hford@rqaw.com>; Aaron Lawson <alawson@rqaw.com>

Subject: ATTN: Nicole Fohey-Breting; SR 32 Roadway Improvements Project in Boone County (DES 1800060 and 1900361)

**** This is an EXTERNAL email. Exercise caution. DO NOT open attachments or click links from unknown senders or unexpected email. ****

Good Morning,

We have had a change to this project at the Marathon Gas Station Located at the SR 32/SR 75 intersection. This project now includes the installation of a curbed island in front of the gas station under Des No. 2101655 (see attachment for location). The addition to the project is to provide a defined entrance/exit for the gas station, to help reduce conflicts for motorist accessing SR 32 from SR 75. This area was covered under the previously approved RFI and limited RFI. The approved RFI's documented the following:

Limited RFI for Des No.'s 1800060 & 1900361 documented the following UST site:

- UST Sites: Dover Marathon, 7995 SR 32 West (AI ID 1951), is incorrectly mapped within the project area, approximately 1.6 mile east of the SR 32 and SR 75 intersection. The site is actually located adjacent to the project area, in the southeast quadrant of the SR 32 and SR 75 intersection. The station was closed, and four (4) USTs were removed in the early 1990's. There is no closure documentation available. Based on the proposed depth of excavation (i.e. 1 ft-bgs), no impact is expected; however, if the depth of excavation should change, coordination with INDOT SAM will occur.

Full RFI for Des No's 180060 & 1900361 documented the following LUST site:

- LUST Sites: Five (5) LUST sites are located within the 0.5 mile search radius. The nearest LUST site, JD Marathon, 8025 West SR 32 (AI ID 4805), is located approximately 0.30 mile west of the Passing lane 3 project area. Petroleum contamination in the soil and groundwater was discovered during a property transaction in 2006. According to the No Further Action (NFA) Determination issued by IDEM on September 26, 2006, low levels of contamination remains on site at depths ranging from 4 to 6 feet bgs. On June 27, 2019 a suspected release was reported to IDEM. A limited Subsurface Investigation was completed on January 10, 2020. The limited Subsurface Investigation concluded that the extent of subsurface petroleum contamination appears to be minimal and sufficiently delineated. Contamination does not appear to migrate off site. No impact is expected.

The designer is looking into options for the installation of raised curb island and feels he can provide a better/more cost effective option if the depth of excavation was to extend to 2 ft. bgs. (1 ft. for concrete pavement removal **and 1 ft. for soil removal**). However, the designer has options to stay within the 1 ft. excavation limit in this area, if extending the depth of excavation to 2 ft. bgs will cause concerns. We just want to get your input on excavation extending to 2 ft. bgs at this location and see if that would trigger any additional concerns? If there are no additional concerns associated with changing the depth of excavation from 1 ft. bgs. to 2ft. bgs surface at this location, are we okay to note this change in the CE Document?

Thanks,

CAMERON FRASER | NEPA SPECIALIST

O: 317.588.1768

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From: Foheybreting, Nicole K <NFoheyBreting@indot.IN.gov>

Sent: Tuesday, December 21, 2021 4:58 AM

To: Cameron Fraser <cfraser@rqaw.com>

Subject: [EXT] RE: [EXT] RE: [EXT] RE: RFI Recommendations for Future Projects

From: INDOT esd.sam <esd.sam@indot.IN.gov>
Sent: Wednesday, December 21, 2022 2:33 PM
To: Harlan Ford
Cc: Aaron Lawson
Subject: RE: Lead Des No. 1800060: SR 32 Passing Lanes and HMA Overlay Project- RFI Addendum Inquiry

Caution: This e-mail originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Thank you for the additional information Harlan –

SAM concurs that an RFI Addendum does not appear warranted given the scope change. Please reach back out to SAM if the scope of work or the extent of the project should change.

Thank you!
Nicole

Nicole Fohey-Breting

*Acting Manager, Environmental Policy Office (EPO)
Site Assessment & Management (SAM) Team Lead
INDOT Environmental Services*

100 North Senate Avenue **N758-ES**
Indianapolis, Indiana 46204

Office: (317) 416-7084

Email: NFoheyBreting@indot.in.gov

Office Hours: 8 to 4 PM



From: Harlan Ford <hford@rqaw.com>
Sent: Tuesday, December 20, 2022 1:01 PM
To: INDOT esd.sam <esd.sam@indot.IN.gov>
Cc: Aaron Lawson <alawson@rqaw.com>
Subject: Lead Des No. 1800060: SR 32 Passing Lanes and HMA Overlay Project- RFI Addendum Inquiry

****** This is an EXTERNAL email. Exercise caution. DO NOT open attachments or click links from unknown senders or unexpected email. ******

Hello INDOT SAM,

We wanted to reach out to your office concerning the need for an RFI addendum for this project. There was one full RFI prepared and one Limited RFI prepared for this project originally. Both the full RFI and LRFI was signed by your office on December 21, 2021 and are now at the 1 year mark. There has been *no substantial* changes to the project since the approval of the RFI and LRFI. The project limits remain the same, but there has been the addition of some small diameter CMP's under residential drives that have been added to the project; however, the project area in the signed RFI and LRFI covers all the added drive pipes. Additionally, the ditch regrading that was to previously occur has been removed from the scope of work and ditches will only be installed along the limits of the 4 passing lanes. RQAW conducted a desktop review of the project area and all GIS layers on 12-20-2022 and found no new resources that would impact the project. Our assessment is that no addendum to the signed RFI or LRFI is necessary. Does INDOT SAM concur that no addendum to the RFI or LRFI is needed for this project?

Please let us know if you need any additional information.

Thank you,



HARLAN FORD

ENVIRONMENTAL SCIENTIST

O: 423.458.5979

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Categorical Exclusion
Appendix F
Water Resources

**Waters of the U.S. Determination
 SR 32: Roadway Improvement Project
 Boone County, Indiana
 Des. No's. 1800060 & 1900361**

APPROVED
Justin McMill
 9/16/21

Prepared by: Harlan Ford, RQAW Corporation
 Completed Date: September 15, 2021

Dates of Waters Field Investigation:

A field investigation was conducted on October 7 and 8, 2020, July 6, 2021, and August 26, 2021 by RQAW Corporation to evaluate the presence of *Waters of the United States* for SR 32 Roadway Improvement Project in Boone County, Indiana.

Location:

SR 32
 Sections 28, 29, 30, 31, 32, 33, 34, 35 Township 19 North, Range 1 West
 Sections 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36 Township 19 North, Range 2 West
 Shannondale, Hazelrigg, and Lebanon U.S. Geological Survey (USGS) Quadrangles
 Boone County, Indiana

Project Termini:

<u>East Terminus</u>	<u>West Terminus</u>
Latitude: 40.04663 °N	Latitude: 40.05470 °N
Longitude: -86.49875 °W	Longitude: -86.68948° W

National Wetlands Inventory (NWI) Wetlands:

According to the U.S. Fish and Wildlife (USFWS) National Wetlands Inventory (NWI) mapper (<https://www.fws.gov/wetlands/data/mapper.html>) there are multiple NWI polygons located within the 0.5 mile radius of the investigation area. There are 6 NWI polygons within the investigation area. Out of these six, four are classified as RS4BC (Riverine, Intermittent, Streambed, Seasonally Flooded) wetlands. One is confined to the banks of UNT to Little Sugar Creek, one is confined to the banks of Sanitary Ditch, one is confined to Higgins Ditch, and one is confined to the banks of Little Sugar Creek. Additionally, 2 R5UBH (Riverine, Unknown Perennial, Unconsolidated Bottom, Permanently Flooded) wetlands were identified within the investigation area. One confined to the banks of Wolf Creek and the other is confined to the banks of Deer Creek. Maps with the USFWS NWI layer turned on is provided in the attachments (pages A27-A29).

According to the United States National Geological Survey (USGS) National Hydrography Dataset (NHD), there are 48 NHD lines within project area. Of these, 8 lines are classified as canal ditch, 2 lines are classified as intermittent, 37 lines are classified as perennial and 1 line is classified as a connector. Maps showing the NHD layer turned on is provided in the attachments (pages A30-A32).

Soils:

According to the Soil Survey Geographic (SSURGO) Database for Boone County, Indiana, the investigation area contains 15 soil areas with nationally listed hydric soils.

<u>Map Abbreviation</u>	<u>Soil Name</u>	<u>Hydric Component Range</u>	<u>Classification</u>
CudA	Crosby silt loam, fine-loamy subsoil, 0 to 2 percent slopes	1 to 32%	Hydric
CxdA	Cyclone silty clay loam, 0 to 2 percent slopes	66 to 99%	Hydric

FdbA	Fincastle silt loam, tipton till plain, 0 to 2 percent slopes	1 to 32%	Hydric
FexC2	Fox loam, 6 to 12 percent slopes, eroded	0%	Not Hydric
MamA	Mahalasville silty clay loam, 0 to 2 percent slopes	66 to 99%	Hydric
MnpB2	Miami silt loam, 2 to 6 percent slopes, eroded	1 to 32%	Hydric
MnpC2	Miami silt loam, 6 to 12 percent slopes, eroded	1 to 32%	Hydric
ObxB2	Ockley silt loam, 2 to 6 percent slopes, eroded	1 to 32%	Hydric
SldAW	Shoals silt loam, 0 to 2 percent slopes, occasionally flooded, very brief duration	1 to 32%	Hydric
SocAW	Sloan silty clay loam, 0 to 1 percent slopes, occasionally flooded, very brief duration	66 to 99%	Hydric
ThrA	Treaty silty clay loam, 0 to 1 percent slopes	66 to 99%	Hydric
UcyA	Urban land-Cyclone silty clay loam complex, 0 to 2 percent slopes	1 to 32%	Hydric
UfgA	Urban land-Fincastle silt loam complex, 0 to 2 percent slopes	1 to 32%	Hydric
UhlA	Urban land-Mahalasville silty clay loam complex, 0 to 2 percent slopes	33 to 65%	Hydric
WofB	Williamstown-Crosby silt loams, 2 to 4 percent slopes	1 to 32%	Hydric
WtaA	Whitaker silt loam, 0 to 2 percent slopes	1 to 32%	Hydric

12 Digit HUC:

Little Creek-Little Sugar Creek: HUC 051201100301
 Wolf Creek: HUC 051201100403
 Deer Creek-Prairie: HUC 051201100402
 Sanitary Ditch-Prairie Creek: HUC 051201100401

Duplicate project maps and photographs have been removed and included in Appendix B. Additional photographs and wetland determination forms have been removed to reduce file size.

Attachments:

~~Project Location Maps.....A1 – A4~~
 Natural Resources Conservation Service (NRCS) Soil Survey Map & Soils Report.....A5 – A12
 StreamStats, Floodway Maps, NWI & NHD Maps, Water Resource Maps.....A13 – A59
~~Photograph Location Maps & Photographs.....A60 – A401~~
~~Wetland Determination Forms.....A402 – A425~~
 Preliminary Jurisdictional Determination Form.....A426 – A429

Project Description:

The Federal Highway Administration (FHWA) and the Indiana Department of Transportation (INDOT) Crawfordsville District propose to proceed with a roadway improvement project located on State Road (SR) 32 from 3.69 miles W. of SR 75 to 0.5 miles W. of I-65 in Boone County, Indiana. The preferred alternative involves a functional Hot Mix Asphalt (HMA) minor structural overlay and the addition of 4 passing lanes (2 eastbound (EB) and 2 westbound (WB) that will each be approximately 1 mile long. The HMA overlay project will be located on SR 32 0.05 mi W of SR 75 to 0.5 mi W of I-65 and the added passing lanes project will be located on SR 32 from 3.69 mi W of SR 75 to 2.47 mi W of I-65. The proposed improvements will involve 6.62 miles of mill and resurface and approximately 4 miles of added passing lanes. This project will perpetuate existing drainage where possible. There are several locations where the ditches are no longer defined. Proposed ditches will be developed in these areas during the design process. Also, new ditches will be established and required in the passing lane areas. The proposed cross section for SR 32 within the HMA overlay portion will include two 12 foot wide travel lanes with 3 foot wide paved shoulders. In the 4 areas where the passing lanes will be installed, the cross section will include three 12 foot wide travel lanes with 3 foot paved shoulders. In addition, all small structures within the limits of the 4 passing lane locations will be evaluated during the design phase for replacement. Please refer to the below table for these structures and their location.

Please note that the scope has been reduced from 4 passing lanes to 3 passing lanes. (Two EB and 1 WB).

No.	Structure Number	Photo Number	Lat/Long	Waterbody/ Wetland	Existing Structure	Length (ft)	Work Type
1	Unnamed	135, 138	40.05390/ -86.53142	N/A	Dual 1.5' Concrete Pipes	47.15	Replacement
2	Unnamed	162, 166	40.05391/ -86.53678	N/A	Dual 1.5' Concrete Pipes	46.96	Replacement
3	Unnamed	332, 336	40.05420/ -86.59711	N/A	Dual 1.25' Concrete pipes	47.3	Replacement
4	Unnamed	363, 367	40.05425/ -86.60852	N/A	Dual 1' Concrete pipes	47	Replacement
5	Unnamed	375, 379	40.05429/ -86.61326	N/A	1.5' Concrete pipe	43.7	Replacement
6	Unnamed	412, 413, 415	40.05442/ -86.63018	N/A	1.5' Concrete pipe	42.45	Replacement
7	Unnamed	421, 424	40.05443/ -86.63190	N/A	2.5' CMP	53	Replacement
8	Unnamed	438, 441	40.05449/ -86.67163	N/A	1.5' Concrete pipe	50.8	Replacement
9	Unnamed	526, 529	40.05465/ -86.67163	N/A	1.25' Concrete Pipe	49.5	Replacement
10	Unnamed	534, 536	40.05465/ -86.67244	N/A	2' CMP	40.1	Replacement
11	Unnamed	553, 557	40.05468/ -86.68357	N/A	1.25' CMP	55.07	Replacement
12	Unnamed	562, 567	40.05468/ -86.68653	N/A	1.25' Concrete pipe	47.15	Replacement
13	CV 032- 006- 53.38	351, 355	40.05468/ -86.68653	N/A	5' X 3' box	42	Replacement

Field Reconnaissance:

The investigation area includes approximately 10.64 miles of SR 32 from 3.69 miles W. of SR 75 to 0.5 miles W. of I-65. The investigation area is within a predominantly rural area mainly comprised of agricultural land and residential properties throughout. The exception is at the east end of the project terminus where the investigation area becomes

more urban and there is an adjacent industrial park. Small, fragmented stands of trees are present throughout. The entire investigation area was investigated for potential stream and wetland features using USGS Topo and NWI maps.

Streams:

According to the hydrology data available through IndianaMap (<http://www.indianamap.org/>) and Shannondale, Hazelrigg, and Lebanon USGS topographic maps (1:24,000 scale), there are 6 blue line streams mapped within/adjacent the investigation area: Little Sugar Creek, UNT to Little Sugar Creek, Wolf Creek, Deer Creek, Higgins Ditch, and Sanitary Ditch. During the field investigation, the presence of all 6 mapped blue line streams was confirmed to be present. Acres of stream within the investigation area are based on the ordinary high water mark (OHWM) width measurements and total linear feet of stream within the project area. All OHWM measurements were taken outside the influence of the structures. A discussion of each stream is provided below.

Sanitary Ditch (187.60ft. or 0.025 acre within investigation area):

Sanitary Ditch is located on the east end of the project terminus. According to the USGS Topo map, Sanitary Ditch is a mapped blue line perennial stream. According to the UGSS StreamStats report, this stream has an upstream drainage area of 6.427 square miles with a gradient of 4.63 feet per mile. This stream flows in a south to north direction and was visually observed to be flowing on the day of field investigation. No rooted plants were observed in the streambed and the channel was free of any debris or sediment build up, both of which are characteristics that this stream has constant flow to prevent debris accumulation and/or rooted plants from establishing in the streambed (photos 1-3, 6, & 7). Therefore, it was determined that this stream has perennial flow. The downstream OHWM measured 5ft. wide and 4 inches deep approximately 15ft. north of the structure. The upstream OHWM measured 6ft. wide and 4 inches deep approximately 15 ft. south of the structure. The substrate consisted primarily of artificial (riprap), and gravel. This stream exhibited average quality as it did exhibit overhanging vegetation, and riffle/pool complexes, but the lack of sinuosity, and contribution of roadside and agricultural drainage detracts from the overall quality. Sanitary Ditch flows into Prairie Creek, which flows into Sugar Creek, which then flows into the Wabash River, a Traditionally Navigable Waterway (TNW). Based on its contribution of perennial flow into a TNW, Sanitary Ditch is likely to be considered a *Waters of the United States*.

Deer Creek (44.10ft. or 0.003 acre within investigation area):

Deer Creek is located approximately 1,300ft. east of the SR 32/CR 250 W. intersection. According to the USGS Topo map, Deer Creek is a mapped blue line intermittent stream that originates on the north side (outlet of structure) of SR 32. According to the USGS StreamStats report, this stream has an upstream drainage area of 0.421 square miles but has an undetermined gradient. On the inlet side of the structure no stream channel was observed. The inlet side consisted of a riprap lined depression that collects drainage from the roadside and adjacent farm field. On the outlet side, the stream channel becomes evident and flows south to north. During the field investigation it was determined that this stream has ephemeral flow as it has a significant amount of rooted plants within the streambed (photos 50 & 51), no flowing water was observed, and no rain events had occurred within the last 48 hours. No downstream OHWM was taken as no stream is present on the inlet side of the structure. The OHWM measured 3ft. wide and 4 inches deep approximately 15ft. north of the structure. The substrate of this stream consisted of silt and was heavily vegetated. This stream would be considered poor quality as it has a predominantly silt and vegetated substrate, contribution of roadside and agricultural field run-off, and channelization. Deer Creek flows into Prairie Creek, which flows into Sugar Creek, which then flows into the Wabash River, a TNW. Based on its contribution of ephemeral flow into a TNW, Deer Creek is likely to be considered a *Waters of the United States*.

Wolf Creek (118.06ft. or 0.013 acre within investigation area):

Wolf Creek is located 1,700ft west of CR 500 W/SR 32 intersection. According to the USGS Topo map, Wolf Creek is a mapped blue line perennial stream. According to the USGS StreamStats Report, this stream has an upstream drainage area of 6.697 square miles but has an undetermined gradient. This stream flows in a south to north direction under SR 32 and was visually observed to be flowing during the field investigation. There was some sedimentation

build up that was allowing some vegetation to establish in the channel and the channel had some debris and leaf litter build up on the streambed, which are characteristics that this stream does not have constant and sufficient flow to prevent debris accumulation and/or rooted plants from establishing in the streambed (photos 253, 256-257). Therefore, it was determined that this stream has intermittent flow. The downstream OHWM measured 3ft. wide and 3 inches deep approximately 15ft. north of the structure. The upstream OHWM measured 5ft. wide and 4 inches deep approximately 15ft. south of the structure. The substrate of Wolf Creek consisted primarily of artificial (riprap), and silt. This stream exhibited average quality due to overhanging vegetation and presence of riffle/pool complexes but the contribution of roadside and agricultural drainage detracts from the overall quality. Wolf Creek flows into Sugar Creek, which then flows into the Wabash River, a TNW. Based on its contribution of intermittent flow into a TNW, Wolf Creek is likely to be considered a *Waters of the United States*.

Little Sugar Creek (2,677.75ft. or 0.184 acre within investigation area):

Little Sugar Creek is located approximately 900ft. west of the CR N. 600W/SR 32 intersection. According to the USGS Topo map, Little Sugar Creek is a mapped blue line intermittent stream originating on the north side of SR 32. According to the USGS StreamStats Report, Little Sugar Creek has a drainage area of 1.957 miles and a gradient of 9.58 feet per mile. Little Sugar Creek originates north of Structure No. CV 032-006-54.25 and flows southwest underneath SR 32 before turning west along the southside of SR 32. At this point, this stream flows in a east to west direction along SR 32 for approximately 1,800 feet before turning northwest and crossing under SR 32 via Structure No. CV 032-006-53.90. The inlet side of Structure No. CV 032-006-54.25 (where the stream originates consisted of a depressional area that conveys roadside and farm field drainage. Wetland C is adjacent to the inlet of Structure No. CV 032-006-54.25. During the field investigation it was determined that this stream has intermittent flow as it has clearly defined OHWM and rooted plants exist within the streambed, both of which, are characteristics of intermittent streams. Some in-stream features were observed which is likely due to sediment build up that is hindering the flow of the stream and allowing hydrophytic vegetation (such as *Typha angustifolia* and *Phalaris arundinacea*) to grow within the stream channel (photos 304-306 and 321). No rain events had occurred in 48 hours prior to the field investigation and water was observed in the stream channel, albeit with little flow where it originates (due to sediment build up). The flow of this stream increases as it moves further west along the south side of SR 32 as evident in photos 309 and 310.

Little Sugar Creek turns northwest flowing under SR 32 approximately 250ft. east of CR 650 W at Structure No. CV 032-006-53.90. The downstream OHWM measured 3ft. wide and 6 inches deep approximately 15ft south of the Structure No CV 032-006-53.90. The upstream OHWM measured 2.5ft. wide and 4 inches deep approximately 20ft. north of Structure No CV 032-006-53.90. The substrate of this stream consisted primarily of silt, with some areas of established vegetation in the streambed. This stream would be considered poor quality as it has a predominantly silt substrate, contribution of roadside and agricultural field run-off, and water opacity was cloudy. Little Sugar Creek flows into Sugar Creek, which flows into the Wabash River, a TNW. Based on its contribution of intermittent flow into a TNW, Little Sugar Creek is likely to be considered a *Waters of the United States*.

Higgins Ditch (116.01ft. or 0.026 acre within investigation area):

Higgins Ditch is located approximately 900ft. west of the SR 75/SR 32 intersection. According to the USGS Topo map, Higgins Ditch is a mapped blue line perennial stream. According to the USGS StreamStats Report, this stream has an upstream drainage area of 2.426 miles and a gradient of 11.6 feet per mile. This stream flows in a south to north direction under SR 32 and was visually observed to be flowing during the field investigation. This stream was determined to have perennial flow as no rooted plants were observed in the streambed, and the channel was free of any debris or sediment build up, both of which are characteristics of perennial streams. The downstream OHWM measured 9.2ft. wide and 8 inches deep taken approximately 15ft. south of the structure. The upstream OHWM measured 10ft. wide and 1ft. deep taken approximately 15ft. north of the structure. The substrate consisted primarily of cobble and silt; however, there was some artificial (riprap) present at the structure. This stream exhibited average quality due to overhanging vegetation, riffle-pool complexes, and cobble/silt substrate. However, there was an abundance of common

duckweed (*Lemna minor*) observed on the water surface upstream of the structure (photos 397 & 398). This is likely due to nutrient enrichment of the stream as a result of farm field runoff which detracts from the overall quality of the stream. Higgins Ditch flows into Little Sugar Creek, which flows into Sugar Creek, which then flows into the Wabash River, a TNW. Based on its contribution of perennial flow into a TNW, Higgins Ditch is likely to be considered a *Waters of the United States*.

UNT to Little Sugar Creek (162.70ft. or 0.011 acre within investigation area):

UNT to Little Sugar Creek is located approximately 350ft. west of the CR N. 1050 W/SR 32 intersection. According to the USGS Topo map UNT to Little Sugar Creek is a mapped blue line intermittent stream. According to the USGS StreamStats map, UNT to Little Sugar Creek has an upstream drainage area of 2.273 square miles and a gradient of 17.4 feet per mile. Some rooted plants were also observed within portions of the stream channel (photo 514) which is indicative of intermittent streams during the fall months when the water table is typically low and does not provide constant flow to deter plant establishment within the channel. Flowing water was observed on the day of the field investigation without any prior rain events within 48 hours. Therefore, this stream was determined to have intermittent flow. The downstream OHWM measured 3ft wide and 3 inches deep approximately 10 ft. north of the structure. The upstream OHWM measured 2.5ft wide and 3 inches deep approximately 10ft. south of the structure. There are two scour holes present on both the upstream and downstream sides of the structure (photos 513-514, 516, and 519). The OHWM measurements were taken outside the scour holes. The substrate consisted primarily of silt with some vegetation. This stream exhibited poor quality due to the lack of sinuosity, primarily silt substrate, murky water, and contribution of roadway and agricultural field runoff. UNT to Little Sugar Creek flows into Little Sugar Creek, which flows into Sugar Creek, which flows into the Wabash River which is a TNW. Based on its contribution of intermittent flow to a TNW, UNT to Little Sugar Creek is likely to be considered a *Waters of the United States*.

Wetlands

Wetland boundaries were determined based on the vegetation present and landscape (i.e. flat versus sloped terrain). The boundaries were recorded via a GIS unit. Wetland type was determined by the dominant plant species. Wetlands within roadside ditches were considered to extend outside the ditch and up the roadway embankment if a field tile or culvert was clogged and provided enough moisture for wetland conditions to persist.

Wetland A (0.022 acre)

Wetland A is located within RSD 5 on the east side of CR 250 W. This wetland likely formed due to poor drainage from a clogged culvert pipe underneath CR 250 W. This wetland would likely be a freshwater emergent (PEM) wetland with a dominance of herbaceous vegetation. Wetland A would likely be considered poor quality due to the disturbance from the roadway and its relatively small size. The eastern boundary of Wetland A was determined as the area would not pass the wetland hydrology criterion and the dominant vegetation at this location (shown in photo 65) consisted of Kentucky bluegrass (*Poa pratensis*, FAC) and tall fescue (*Schedonorus arundianceus*, FACU), which would not pass the hydrophytic vegetation criterion. Wetland A would likely be considered a Waters of the State and under the jurisdiction of IDEM as there is no known connection to a TNW and it is not directly abutting a stream or within a floodplain to a likely *Waters of the United States*. However, INDOT is requesting the USACE to take jurisdiction over this wetland.

Datapoint A1 is considered to be within a wetland. The dominant vegetation consisted of yellow foxtail (*Setaria pumila*; FAC) and narrowleaf cattail (*Typha angustifolia*; OBL). This datapoint also exhibited a hydric soil indicator (Depleted Matrix; F3). In addition, this datapoint also exhibited two secondary hydrology indicators (Drainage Patterns; B10 and FAC-Neutral Test; D5).

Datapoint A2 did not exhibit all three criteria to be considered within a wetland. This datapoint passed the dominance test with dominant vegetation consisting of yellow foxtail (*Setaria pumila*; FAC). However, this data point failed to

meet the hydric soils criterion and did not exhibit any wetland hydrology indicators. Therefore, datapoint A2 was not considered to be within a wetland.

Wetland B (0.001 acre)

Wetland B is located within the investigation on the west side of CR 250 W. This wetland likely formed due to poor drainage from a clogged culvert pipe underneath CR 250W. This wetland would likely be a freshwater emergent (PEM) wetland with a dominance of herbaceous vegetation. Wetland B would likely be considered poor quality due to the disturbance from the roadway and its relatively small size. Wetland B would likely be considered a Waters of the State and under the jurisdiction of IDEM as there is no known connection to a TNW and it is not directly abutting a stream or within a floodplain to a likely *Waters of the United States*. However, INDOT is requesting the USACE to take jurisdiction over this wetland.

Datapoint B1 is considered to be within a wetland. The dominant vegetation consisted of yellow nutsedge (*Cyperus esculentus*; FACW), Kentucky blue grass (*Poa pratensis*; FAC) and narrowleaf cattail (*Typha angustifolia*; OBL). This datapoint also exhibited a hydric soil indicator (Depleted Dark Surface; F7). In addition, this datapoint also exhibited two secondary hydrology indicators (Drainage Patterns; B10 and FAC-Neutral Test; D5).

Datapoint B2 did not exhibit all three criteria to be considered within a wetland. This datapoint passed the dominance test with dominant vegetation consisting of Kentucky blue grass (*Poa pratensis*; FAC) and yellow foxtail (*Setaria pumila*; FAC). However, this data point failed to meet the hydric soils criterion and did not exhibit any wetland hydrology indicators. Therefore, datapoint B2 was not considered to be within a wetland.

Wetland C (0.005 acre)

Wetland C is located within a depressional area just east of Little Sugar Creek. This wetland likely formed due to the constant moisture provided by buried field tiles. This wetland would likely be a freshwater emergent (PEM) wetland with a dominance of herbaceous vegetation. Wetland C would likely be considered poor quality due to the disturbance from the roadway, lack of cover, and its relatively small size. In addition, multiple attempts were made to collect datapoints C1 and C2; however, both were difficult to gather due to the presence of concrete, rebar, brick, and/or roadside fill. Wetland C would likely be considered a *Waters of the United States* as it is within the floodplain of Little Sugar Creek, which is also likely a *Waters of the United States*.

Datapoint C1 is to be considered within a wetland. The dominant vegetation consisted of narrowleaf cattail (*Typha angustifolia*; OBL) and reed-canary grass (*Phalaris arundinacea*; FACW). This datapoint also exhibited a hydric soil indicator (Redox Dark Surface; F6) although a restrictive layer (concrete, rebar, brick) was encountered at 9 inches. In addition, this datapoint also exhibited two secondary hydrology indicators (Drainage Patterns; B10 and Geomorphic Position; D2).

Datapoint C2 did not exhibit all three criteria to be considered within a wetland. Dominant vegetation consisted of Kentucky blue grass (*Poa pratensis*; FAC) and yellow foxtail (*Setaria pumila*; FAC). A restrictive layer was encountered at 9 inches consisting of roadside fill and this data point failed to meet the hydric soils criterion. In addition, this datapoint did not exhibit any wetland hydrology indicators; therefore, datapoint C2 was not considered to be within a wetland.

Wetland D (0.011 acre)

Wetland D is located within the investigation on the east side of CR 1050 W at the inlet of CV 032-006-49.90. This wetland likely formed due to poor drainage through the structure due to heavy sediment build up. This wetland would likely be a freshwater emergent (PEM) wetland with a dominance of herbaceous vegetation. Wetland D would likely be considered poor quality due to the disturbance from the roadway, lack of cover, and its relatively small size. Wetland D would likely be considered a *Waters of the United States* as it is hydrologically connected to Wetland E via Structure

No. CV 032-006-49.90 which is also likely considered to be a *Waters of the United States* as it within the floodplain of UNT to Little Sugar Creek.

Datapoint D1 is to be considered within a wetland. The dominant vegetation consisted of narrowleaf cattail (*Typha angustifolia*; OBL). This datapoint also exhibited a hydric soil indicator (Redox Dark Surface; F6). In addition, this datapoint also exhibited one primary hydrology indicator (Saturation; A3) and one secondary hydrology indicator (Drainage Patterns; B10).

Datapoint D2 did not exhibit all three criteria to be considered within a wetland. Dominant vegetation consisted of Kentucky blue grass (*Poa pratensis*; FAC). However, this data point failed to meet the hydric soils criterion and did not exhibit any wetland hydrology indicators. Therefore, datapoint D2 was not considered to be within a wetland.

Wetland E (0.054 acre)

Wetland E is located within the investigation on the west side of CR 1050 W at the inlet of CV 032-006-49.90. This wetland likely formed due to poor drainage through the structure due to heavy sediment build up. Wetland E extends within RSD 26 and drains into UNT to Little Sugar Creek. This wetland would likely be a freshwater emergent (PEM) wetland with a dominance of herbaceous vegetation. Wetland E would likely be considered poor quality due to the disturbance from the roadway and lack of cover. Wetland E would likely be considered a *Waters of the United States* as it is within the floodplain of UNT to Little Sugar Creek, which is also likely a *Waters of the United States*.

Datapoint E1 is to be considered within a wetland. The dominant vegetation consisted of narrowleaf cattail (*Typha angustifolia*; OBL), spotted lady's thumb (*Persicaria maculosa*; FACW), and Kentucky blue grass (*Poa pratensis*; FAC). This datapoint also exhibited a hydric soil indicator (Sandy Redox; S5). In addition, this datapoint also exhibited two secondary hydrology indicators (Drainage Patterns; B10 and FAC-Neutral Test; D5).

Datapoint E2 did not exhibit all three criteria to be considered within a wetland. Dominant vegetation consisted of Kentucky blue grass (*Poa pratensis*; FAC). However, this data point failed to meet the hydric soils criterion and did not pass the wetland hydrology criterion as it only met one secondary hydrology indicator (FAC-Neutral Test, D5). Therefore, datapoint E2 was not considered to be within a wetland.

It is important to note that the dominant vegetation shifts from narrowleaf cattails (*Typha angustifolia*; OBL) to reed canary grass (*Phalaris arundinacea*; FACW) and late goldenrod (*Solidago gigantea*; FACW) which is visible in photos 507 and 508. Although the vegetation shifted since it remained hydrophytic, other datapoints were taken. The vegetation shift is visible in photos 507 and 508.

Upland Data Points:

Two upland datapoints were taken as proof of absence points based on visual observation of hydrophytic vegetation in conjunction with visible wetland hydrology indicators. These two datapoints are described below.

Datapoint UP1: This datapoint was taken just south of Structure No. CV 032-006-53.38. The dominant vegetation observed at this datapoint was curly doc (*Rumex crispus*, FAC) and therefore it passed the hydrophytic vegetation criterion. In addition, this datapoint passed the hydrology criterion by exhibiting two secondary indicators (Surface Soil Cracks, B6) and (Drainage Patterns, B10). However, this datapoint failed to exhibit hydric soils; therefore, it was determined that datapoint UP1 was not within a wetland.

Datapoint UP2: This datapoint was taken just southwest of Unnamed Structure 12. The dominant vegetation observed at this datapoint was barnyard grass (*Echinochloa crus-gali*, FACW) and therefore it passed the hydrophytic vegetation criterion. In addition, this datapoint passed the hydrology criterion by exhibiting two secondary indicators (Surface

Soil Cracks, B6) and (Drainage Patterns, B10). In summary, this datapoint failed to exhibit hydric soils; therefore, it was determined that datapoint UP2 was not within a wetland.

Open Water:

No open water features were observed within the investigation area.

Roadside Ditches:

Thirty (30) Roadside ditches (RSD's) were observed throughout the investigation area and were reviewed for potential water resources. All roadside ditches lacked OHWM and/or wetland characteristics; therefore, they were considered to be non-jurisdictional features.

Erosional Features:

Three erosional features were found during within the investigation area and were reviewed for potential water resources. See below description of each Erosional Feature found within the investigation area.

Erosional Feature 1: This erosional feature was found just north of the inlet of Unnamed Structure 1. It appears to carry sheet flow from the adjacent farm field to the north. Erosional Feature 1 was not found out the outlet of the structure. Erosional Feature 1 lacked OHWM and/or wetland characteristics; therefore, it was considered to be a non-jurisdictional feature.

Erosional Feature 2: This erosional feature was found just south of the outlet of CV 032-006-53.38. Erosional Feature 2 was not present at the inlet of the structure. Erosional Feature 2 lacked OHWM and/or wetland characteristics; therefore, it was considered to be a non-jurisdictional feature.

Erosional Feature 3: This erosional feature was found just south of the inlet of Unnamed Structure 7. Erosional Feature 3 was not found out the outlet of the structure. Erosional Feature 3 lacked OHWM and/or wetland characteristics; therefore, it was considered to be a non-jurisdictional feature.

**Table 1: Stream Summary
 SR 32: Roadway Improvement Project
 Des. No's. 1800060 & 1900361
 Boone County, Indiana**

Stream Name	Photos	Lat/Long	OHWM Width (feet)	OHWM Depth (feet)	USGS Blue-line?/Flow	Riffles/ Pools?	Substrate	Flow Regime	Quality	Likely Water of U.S.?
Sanitary Ditch	1-3, 6-7, 9	40.04674, -86.49890	6	0.3	Yes/ Perennial	Yes	Artificial, Gravel	Perennial	Average	Yes
Deer Creek	49-50-51	40.04672, -86.51357	3	0.3	Yes/ Intermittent	No	Silt, Vegetated	Ephemeral	Poor	Yes
Wolf Creek	252-253, 256-257	40.05416, -86.56954	5	0.3	Yes/ Perennial	Yes	Artificial, Silt	Intermittent	Average	Yes
Little Sugar Creek	300-301, 304-306, 309-311, 315-317, 320-323	40.05417, -86.58984	3	0.5	Yes/ Intermittent	No	Silt, Vegetated	Intermittent	Poor	Yes
Higgins Ditch	396-400	40.05449, -86.62284	10	1	Yes/ Perennial	Yes	Cobble, Silt, Artificial	Perennial	Average	Yes
UNT to Little Sugar Creek	511-514 516,518-519	40.05472, -86.66828	3	0.25	Yes/ Intermittent	No	Silt, Vegetated	Intermittent	Poor	Yes

**Table 2: Wetland Summary
 SR 32: Roadway Improvement Project
 Des. No's. 1800060 & 1900361
 Boone County, Indiana**

Wetland Name	Photos	Lat/Long	Type	Wetland Quality	Total Area (acres)	Likely Water of U.S.?
Wetland A	66-69, 73-75	40.04682° N -86.51822° W	PEM	Poor	0.022	Yes
Wetland B	77, 79-82	40.04682° N -86.51847° W	PEM	Poor	0.001	Yes
Wetland C	293, 295- 296, 299-301	40.05429° N -86.58506° W	PEM	Poor	0.005	Yes
Wetland D	491-496, 498	40.05473° N -86.66690° W	PEM	Poor	0.011	Yes
Wetland E	501-508, 511	40.05473° N -86.66769° W	PEM	Poor	0.054	Yes

**Table 3: Data Point Summary
 SR 32: Roadway Improvement Project
 Des. No's. 1800060 & 1900361
 Boone County, Indiana**

Data Point	Vegetation?	Hydric Soil	Wetland Hydrology	Wetland
A1	Yes	Yes	Yes	Yes
A2	Yes	No	No	No
B1	Yes	Yes	Yes	Yes
B2	Yes	No	No	No
C1	Yes	Yes	Yes	Yes
C2	Yes	No	No	No
D1	Yes	Yes	Yes	Yes
D2	Yes	No	No	No
E1	Yes	Yes	Yes	Yes
E2	Yes	No	No	No
UP1	Yes	No	Yes	No
UP2	Yes	No	Yes	No

Conclusions:

A field investigation was conducted on October 7 and 8, 2020, July 6, 2021, and August 26, 2021 by RQAW Corporation to evaluate the presence of *Waters of the United States* for SR 32 Roadway Improvement Project in Boone County, Indiana.

Sanitary Ditch, Deer Creek, Wolf Creek, Little Sugar Creek, Higgins Ditch, and UNT to Little Sugar Creek would all likely be considered *Waters of the United States* since they all contribute either ephemeral, intermittent, or perennial flow to the Wabash River, a TNW, in a typical year. Wetlands C, D, and E are likely to be considered *Waters of the United States* based on their hydrological connection to one of the afore mentioned likely *Waters of the United States*.

Two wetlands (A and B) would likely be considered Waters of the State and likely under the jurisdiction of IDEM as there is no known connection to a TNW and they do not directly abut a stream or located within a floodplain to a likely *Waters of the United States*. However, INDOT is requesting the USACE to take jurisdiction over these wetlands.

Every effort should be taken to avoid and minimize impacts to these waterways. If impacts are necessary, then mitigation may be required. The INDOT Ecology and Waterway Permitting Section should be contacted immediately if impacts will occur. The final determination of jurisdictional waters is ultimately made by the U.S. Army Corps of Engineers. This report is our best judgement based on the guidelines set forth by the Corps.

Acknowledgement:

This waters determination has been prepared based on the best available information, interpreted in the light of the investigator's training, experience and professional judgement in conformance with the 1987 Corps of Engineers Wetlands Delineation Manual, the appropriate regional supplement, the USACE Jurisdictional Determination Form Instructional Guidebook, and other appropriate agency guidelines.

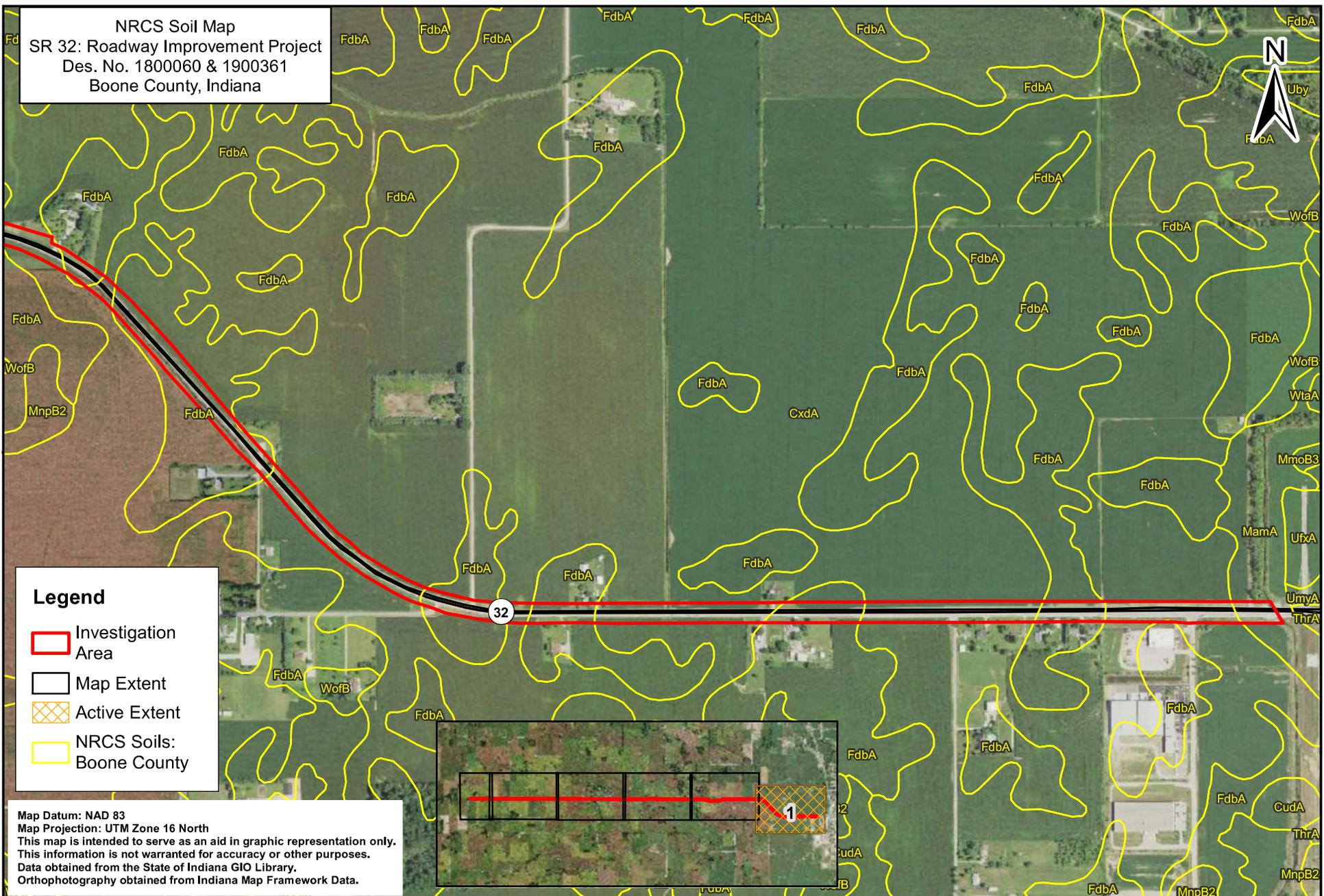
Prepared by:



9/15/21

Harlan Ford
Environmental Scientist
RQAW | Environmental Department
hford@RQAW.com

NRCS Soil Map
SR 32: Roadway Improvement Project
Des. No. 1800060 & 1900361
Boone County, Indiana



Legend

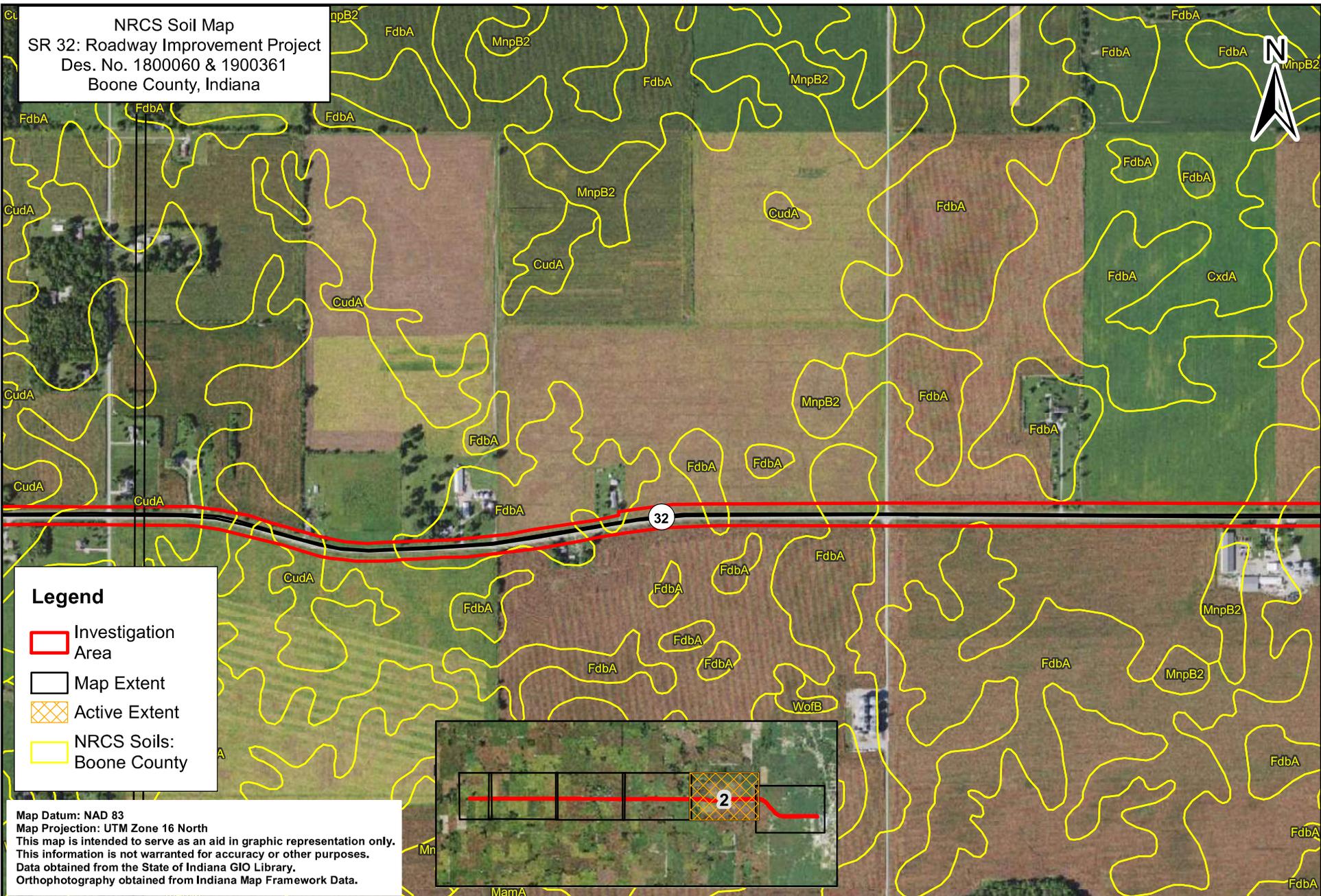
- Investigation Area
- Map Extent
- Active Extent
- NRCS Soils: Boone County

Map Datum: NAD 83
 Map Projection: UTM Zone 16 North
 This map is intended to serve as an aid in graphic representation only.
 This information is not warranted for accuracy or other purposes.
 Data obtained from the State of Indiana GIO Library.
 Orthophotography obtained from Indiana Map Framework Data.



	NRCS Soil Map 1 of 6			Location: SR 32 Township: Jefferson & Center County: Boone Date: 05/25/21

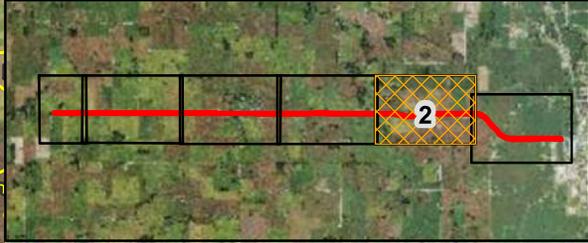
NRCS Soil Map
 SR 32: Roadway Improvement Project
 Des. No. 1800060 & 1900361
 Boone County, Indiana



Legend

- Investigation Area
- Map Extent
- Active Extent
- NRCS Soils: Boone County

Map Datum: NAD 83
 Map Projection: UTM Zone 16 North
 This map is intended to serve as an aid in graphic representation only.
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 Orthophotography obtained from Indiana Map Framework Data.



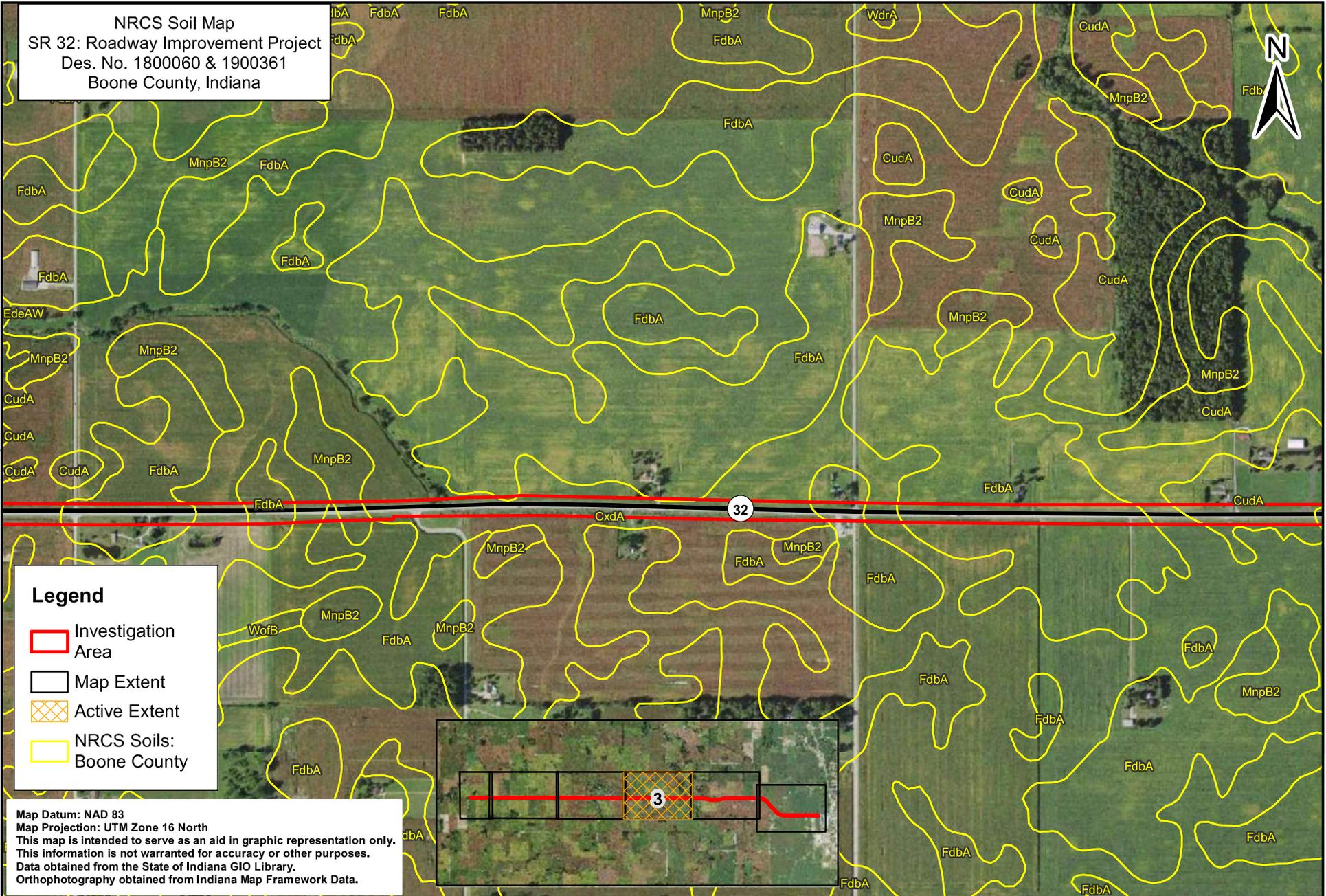
NRCS Soil Map 2 of 6

Miles

0 0.225 0.45 0.9

Location: SR 32
 Township: Jefferson & Center
 County: Boone
 Date: 05/25/21

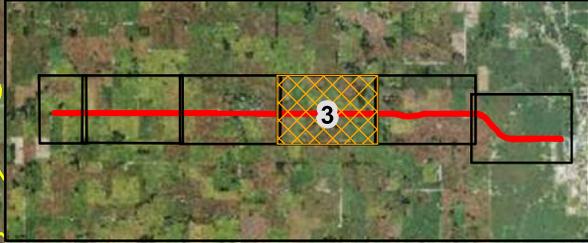
NRCS Soil Map
 SR 32: Roadway Improvement Project
 Des. No. 1800060 & 1900361
 Boone County, Indiana



Legend

- Investigation Area
- Map Extent
- Active Extent
- NRCS Soils: Boone County

Map Datum: NAD 83
 Map Projection: UTM Zone 16 North
 This map is intended to serve as an aid in graphic representation only.
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 Data obtained from the State of Indiana GIO Library.
 Orthophotography obtained from Indiana Map Framework Data.

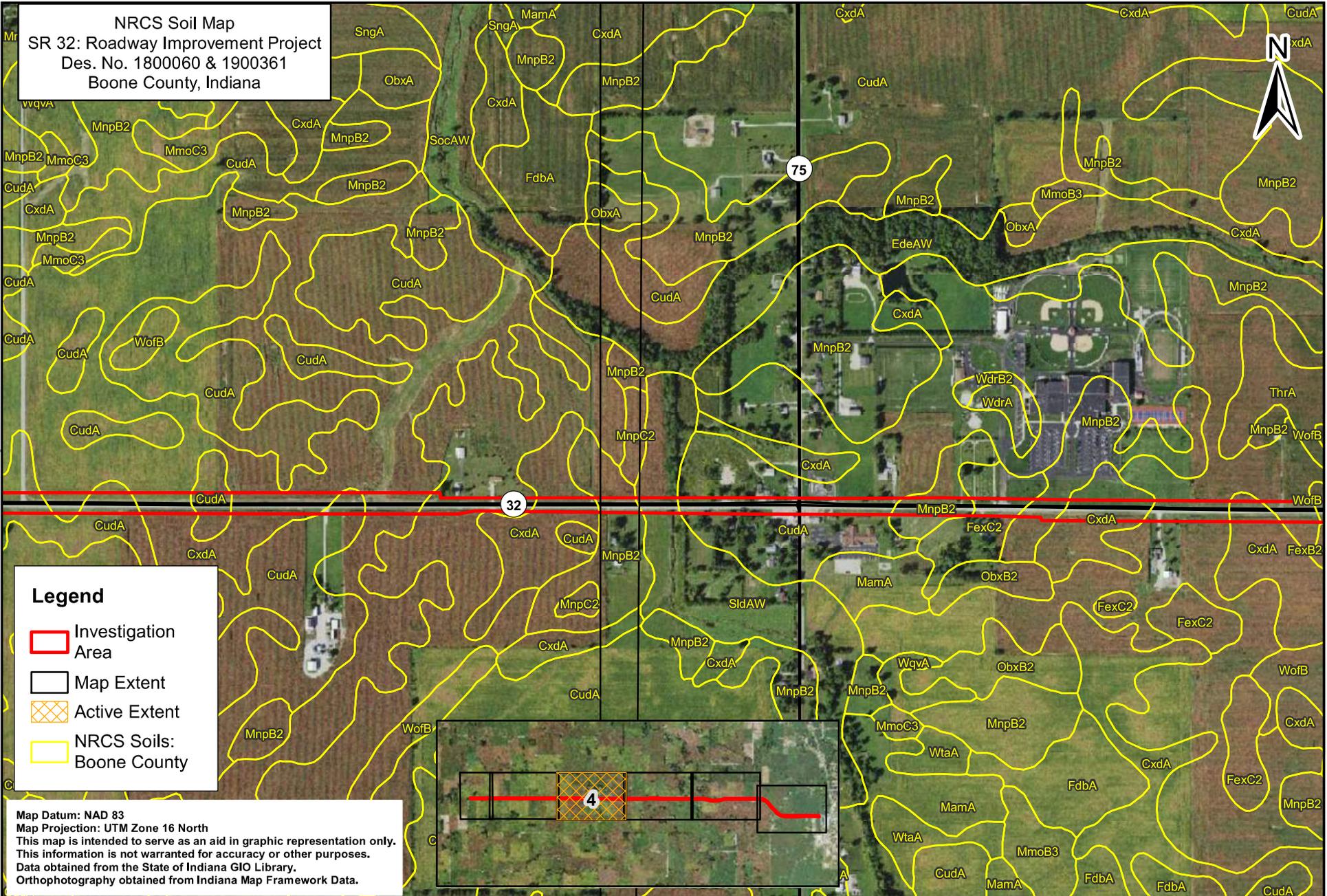


NRCS Soil Map 3 of 6

0 0.225 0.45 0.9 Miles

Location: SR 32
 Township: Jefferson & Center
 County: Boone
 Date: 05/25/21

NRCS Soil Map
SR 32: Roadway Improvement Project
Des. No. 1800060 & 1900361
Boone County, Indiana



Legend

- Investigation Area
- Map Extent
- Active Extent
- NRCS Soils: Boone County

Map Datum: NAD 83
 Map Projection: UTM Zone 16 North
 This map is intended to serve as an aid in graphic representation only.
 This information is not warranted for accuracy or other purposes.
 Data obtained from the State of Indiana GIO Library.
 Orthophotography obtained from Indiana Map Framework Data.

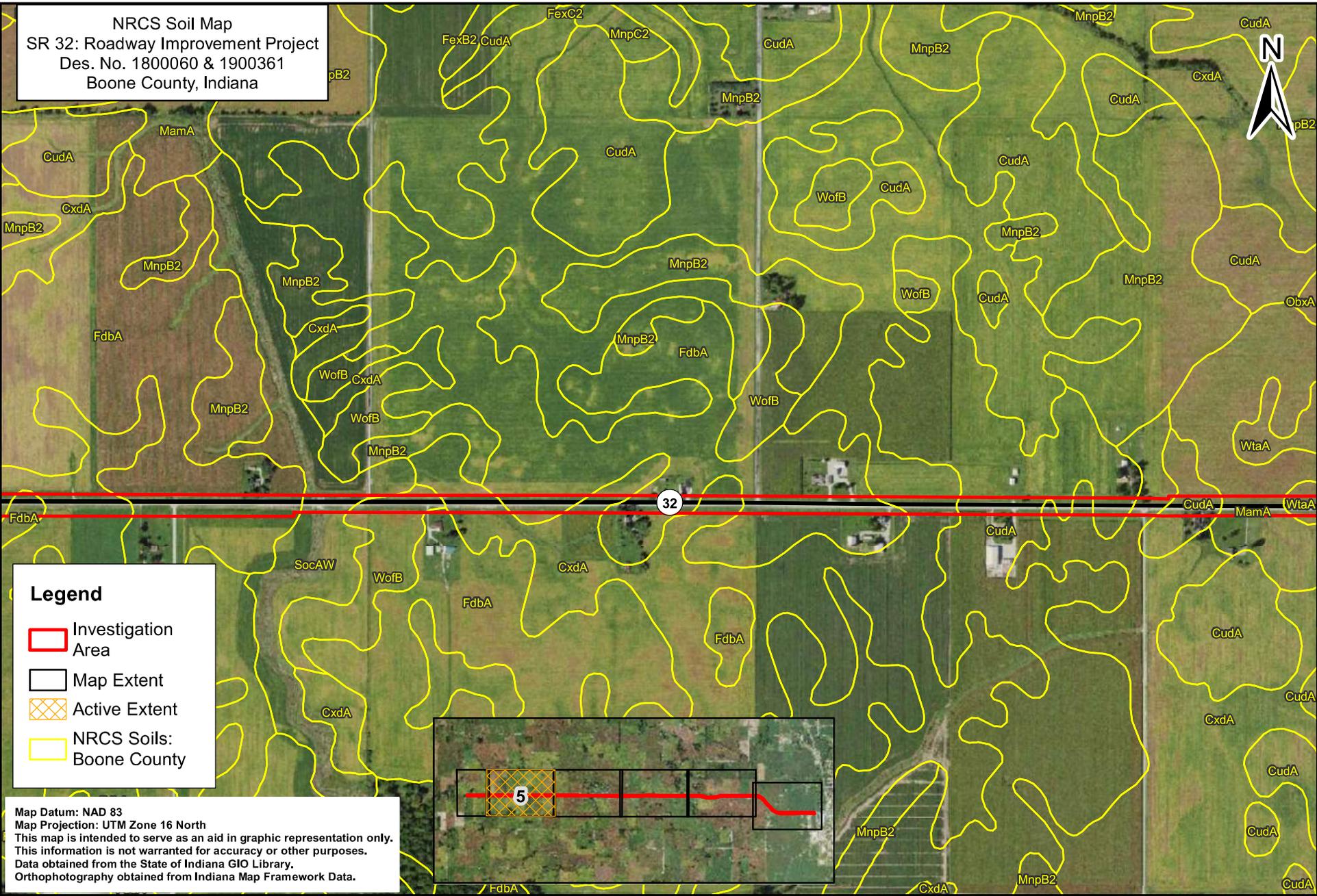


NRCS Soil Map 4 of 6

Miles

Location: SR 32
 Township: Jefferson & Center
 County: Boone
 Date: 05/25/21

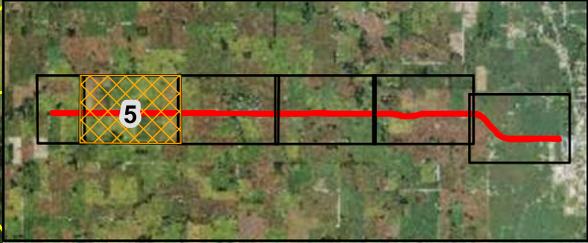
NRCS Soil Map
 SR 32: Roadway Improvement Project
 Des. No. 1800060 & 1900361
 Boone County, Indiana



Legend

- Investigation Area
- Map Extent
- Active Extent
- NRCS Soils: Boone County

Map Datum: NAD 83
 Map Projection: UTM Zone 16 North
 This map is intended to serve as an aid in graphic representation only.
 This information is not warranted for accuracy or other purposes.
 Data obtained from the State of Indiana GIO Library.
 Orthophotography obtained from Indiana Map Framework Data.

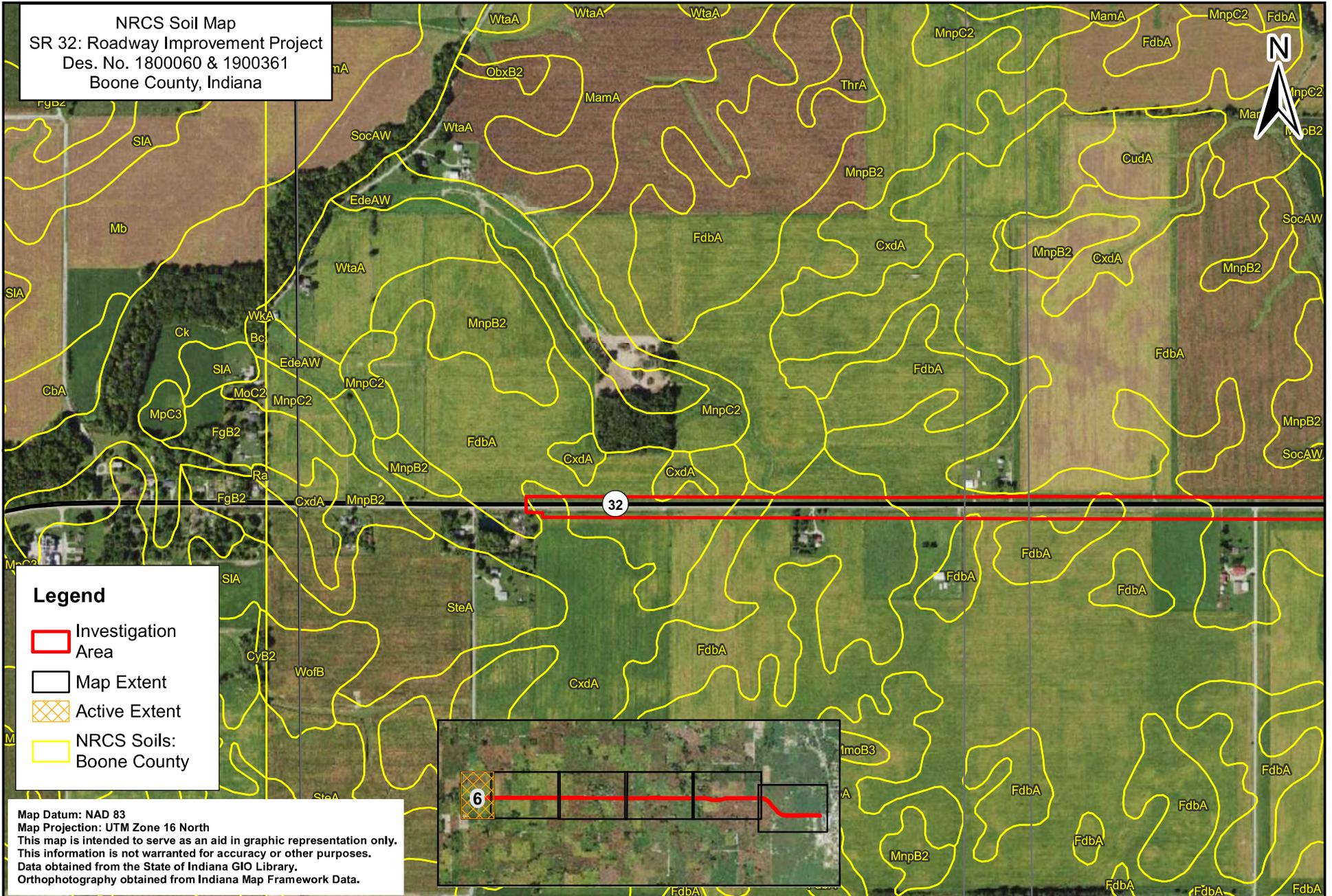


NRCS Soil Map 5 of 6

0 0.225 0.45 0.9 Miles

Location: SR 32
 Township: Jefferson & Center
 County: Boone
 Date: 05/25/21

NRCS Soil Map
 SR 32: Roadway Improvement Project
 Des. No. 1800060 & 1900361
 Boone County, Indiana



Legend

- Investigation Area
- Map Extent
- Active Extent
- NRCS Soils: Boone County

Map Datum: NAD 83
 Map Projection: UTM Zone 16 North
 This map is intended to serve as an aid in graphic representation only.
 This information is not warranted for accuracy or other purposes.
 Data obtained from the State of Indiana GIO Library.
 Orthophotography obtained from Indiana Map Framework Data.

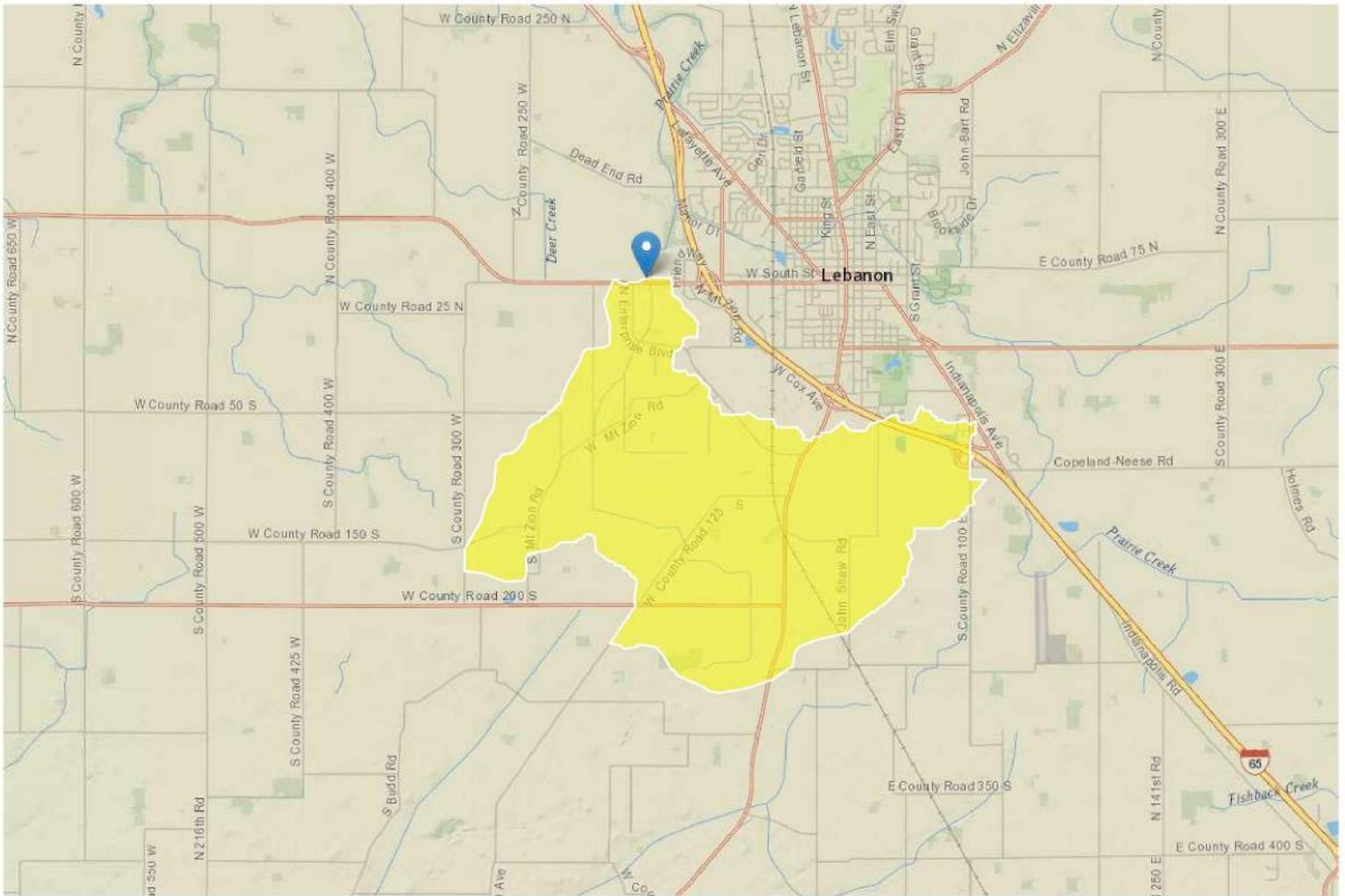


	NRCS Soil Map 6 of 6		Location: SR 32 Township: Jefferson & Center County: Boone Date: 05/25/21
			

Hydric Rating by Map Unit

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
CudA	Crosby silt loam, fine-loamy subsoil, 0 to 2 percent slopes	2	62.8	17.5%
CxdA	Cyclone silty clay loam, 0 to 2 percent slopes	83	157.7	43.9%
FdbA	Fincastle silt loam, tipton till plain, 0 to 2 percent slopes	15	101.2	28.2%
FexC2	Fox loam, 6 to 12 percent slopes, eroded	0	3.0	0.8%
MamA	Mahalasville silty clay loam, 0 to 2 percent slopes	98	8.5	2.4%
MnpB2	Miami silt loam, 2 to 6 percent slopes, eroded	5	10.0	2.8%
MnpC2	Miami silt loam, 6 to 12 percent slopes, eroded	5	0.1	0.0%
ObxB2	Ockley silt loam, 2 to 6 percent slopes, eroded	5	1.3	0.4%
SlidAW	Shoals silt loam, 0 to 2 percent slopes, occasionally flooded, very brief duration	5	1.7	0.5%
SocAW	Sloan silty clay loam, 0 to 1 percent slopes, occasionally flooded, very brief duration	94	2.8	0.8%
ThrA	Treaty silty clay loam, 0 to 1 percent slopes	95	0.3	0.1%
UcyA	Urban land-Cyclone silty clay loam complex, 0 to 2 percent slopes	15	2.7	0.8%
UfgA	Urban land-Fincastle silt loam complex, 0 to 2 percent slopes	5	0.1	0.0%
UhIA	Urban land-Mahalasville silty clay loam complex, 0 to 2 percent slopes	39	0.9	0.3%
WofB	Williamstown-Crosby silt loams, 2 to 4 percent slopes	5	2.6	0.7%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
WtaA	Whitaker silt loam, 0 to 2 percent slopes	5	2.6	0.7%
Totals for Area of Interest			359.3	100.0%



CONDA	Area that contributes flow to a point on a stream	6.427 square miles
DRNAREA	Area that drains to a point on a stream	6.427 square miles
K2INDNR	Average hydraulic conductivity (ft/d) for the full depth of unconsolidated deposits from InDNR well database.	10 ft per day
T2INDNR	Average transmissivity (ft ² /d) for the full depth of unconsolidated deposits from InDNR well database.	1344 square feet per day

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Application Version: 4.5.3
 StreamStats Services Version: 1.2.22
 NSS Services Version: 2.1.2



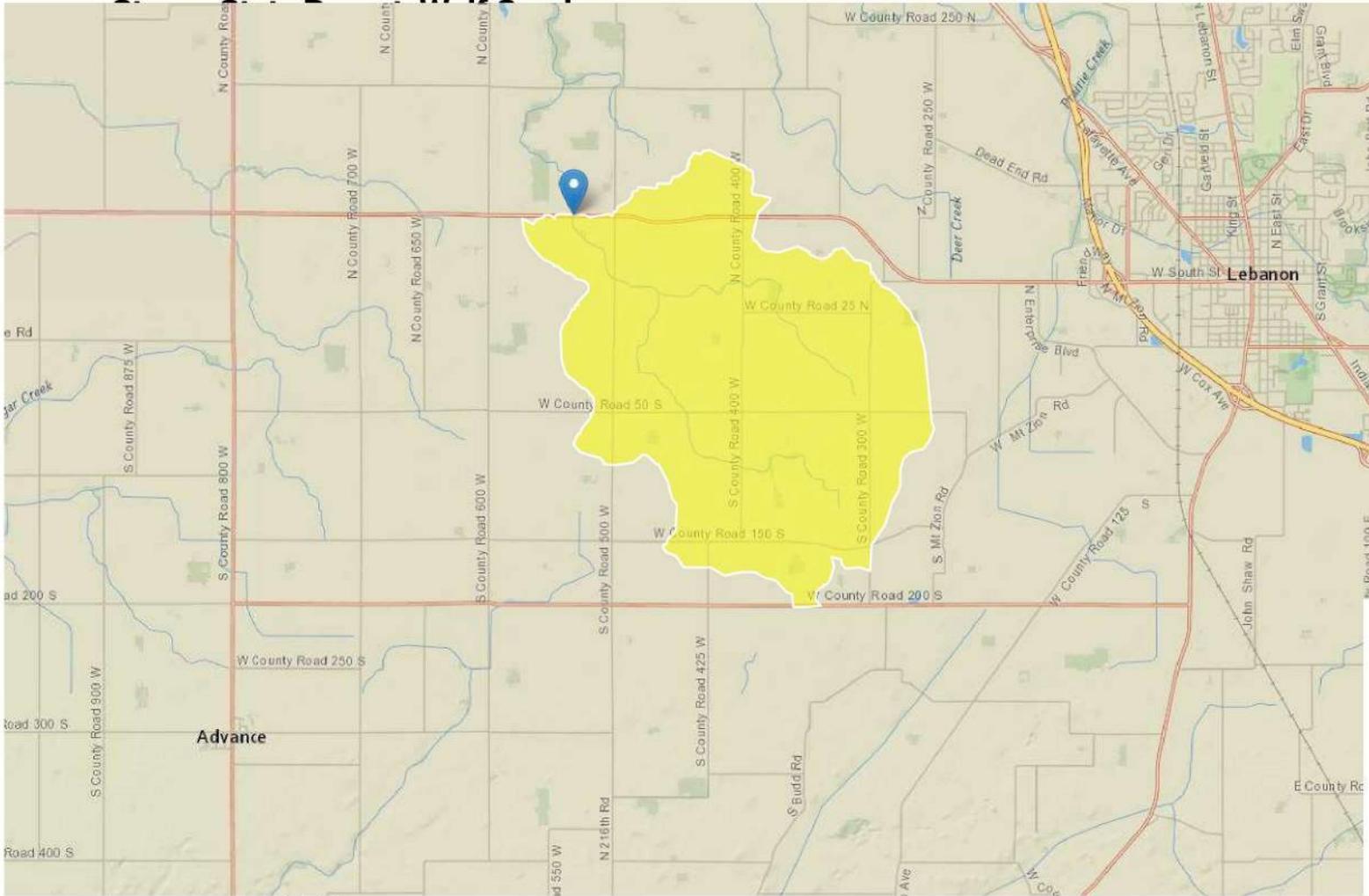
K2INDNR	Average hydraulic conductivity (ft/d) for the full depth of unconsolidated deposits from InDNR well database.	9	ft per day
T2INDNR	Average transmissivity (ft ² /d) for the full depth of unconsolidated deposits from InDNR well database.	1007	square feet per day

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Application Version: 4.5.3
 StreamStats Services Version: 1.2.22
 NSS Services Version: 2.1.2



T21NDNR	Average transmissivity (ft ² /d) for the full depth of unconsolidated deposits from InDNR well database.	973	square feet per day
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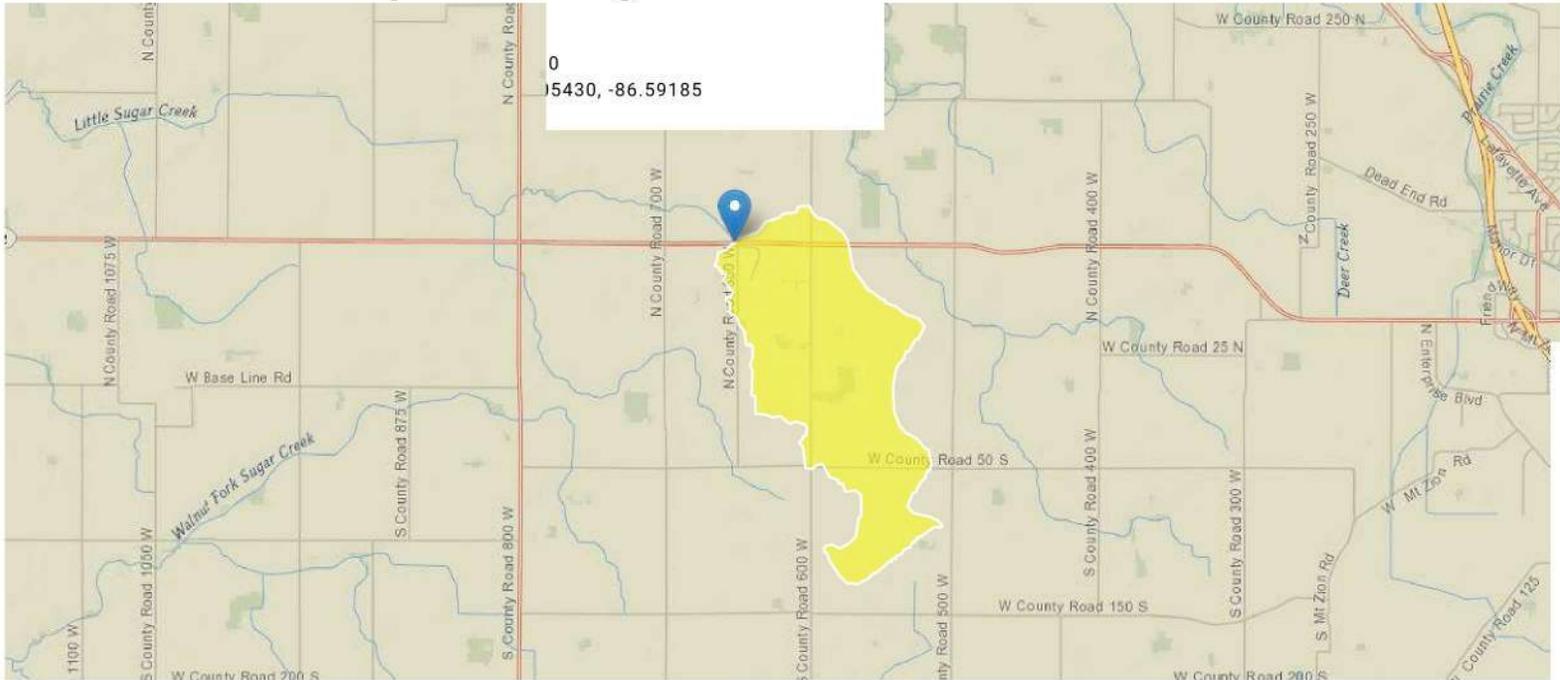
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Application Version: 4.5.3
 StreamStats Services Version: 1.2.22
 NSS Services Version: 2.1.2

StreamStats Report: Little Sugar Creek



Basin Characteristics			
Parameter Code	Parameter Description	Value	Unit
CONDA	Area that contributes flow to a point on a stream	1.956	square miles
DRNAREA	Area that drains to a point on a stream	1.956	square miles
K2INDNR	Average hydraulic conductivity (ft/d) for the full depth of unconsolidated deposits from InDNR well database.	10	ft per day
T2INDNR	Average transmissivity (ft ² /d) for the full depth of unconsolidated deposits from InDNR well database.	1121	square feet per day

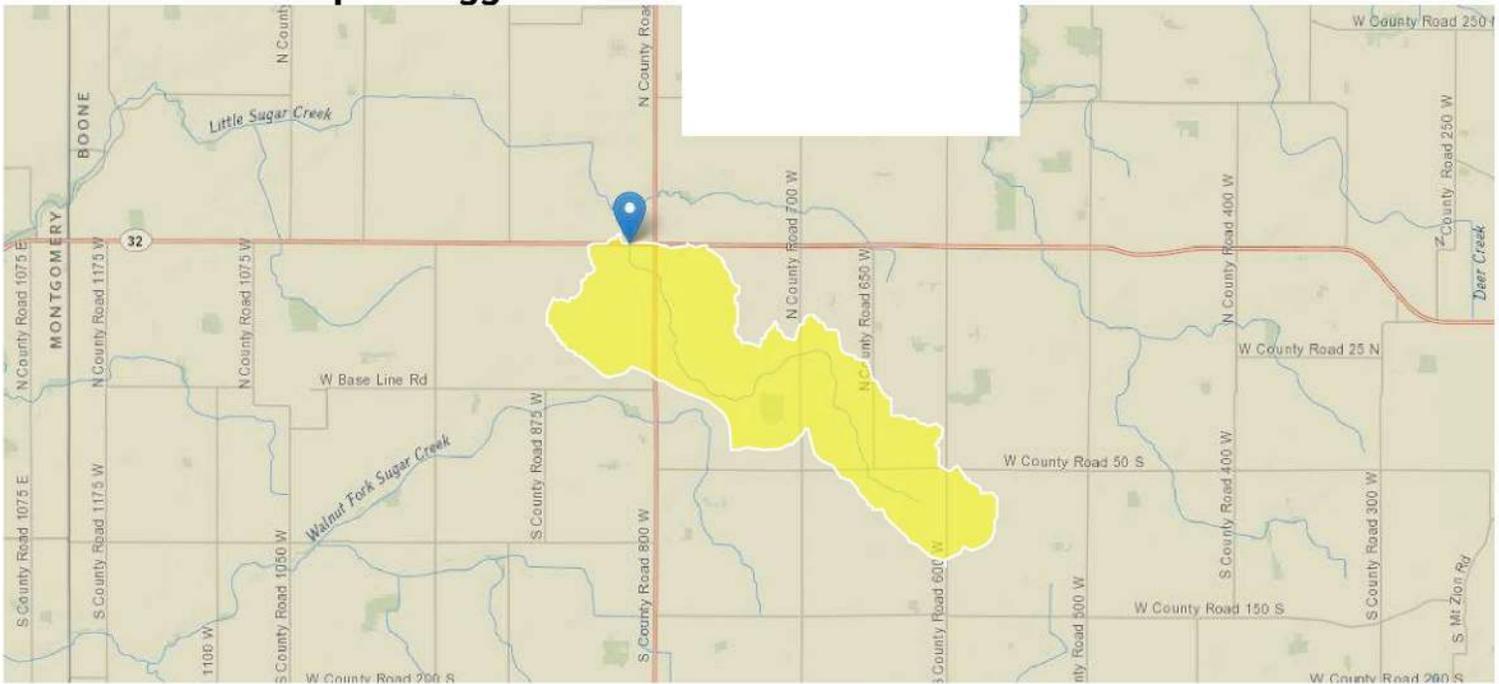
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Application Version: 4.5.3
 StreamStats Services Version: 1.2.22
 NSS Services Version: 2.1.2

StreamStats Report: Higgins Ditch



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
CONDA	Area that contributes flow to a point on a stream	2.425	square miles
DRNAREA	Area that drains to a point on a stream	2.425	square miles
K2INDNR	Average hydraulic conductivity (ft/d) for the full depth of unconsolidated deposits from InDNR well database.	11	ft per day
T2INDNR	Average transmissivity (ft ² /d) for the full depth of unconsolidated deposits from InDNR well database.	1046	square feet per day

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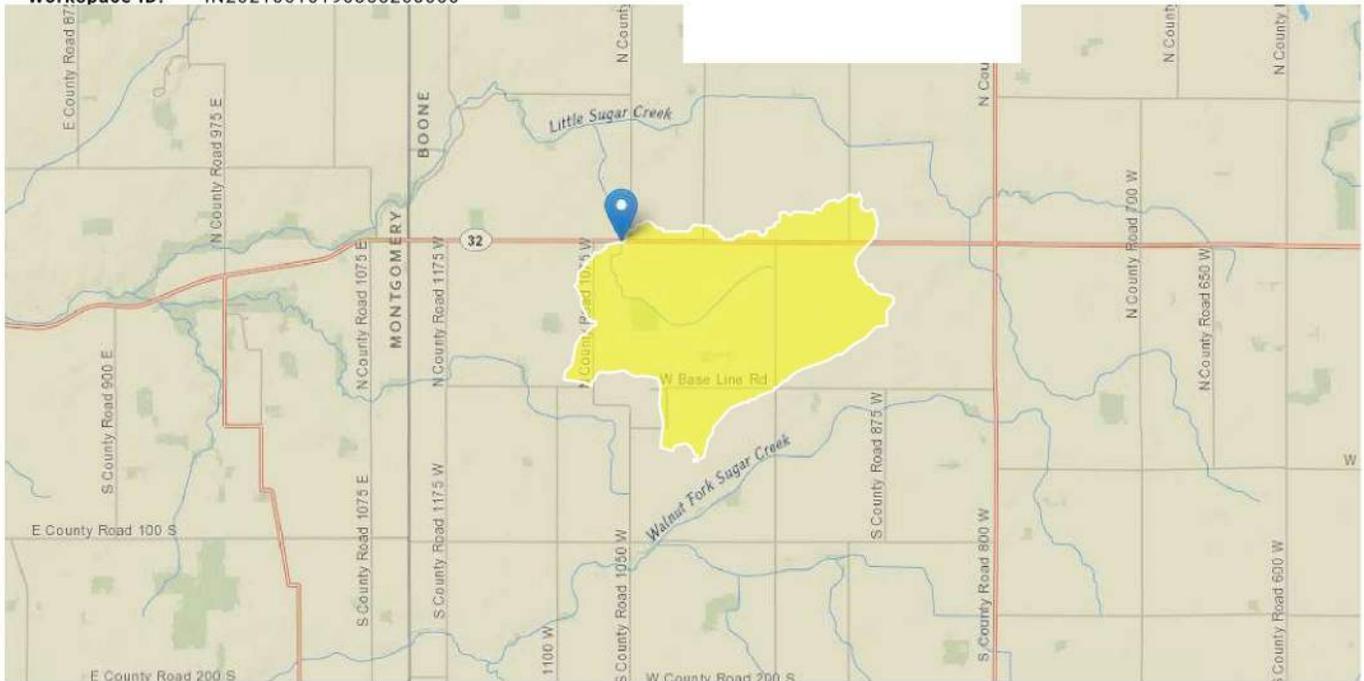
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Application Version: 4.5.3
 StreamStats Services Version: 1.2.22
 NSS Services Version: 2.1.2

StreamStats Report UNT to Little Sugar Creek

Region ID: IN
 Workspace ID: IN20210610190355260000



Basin Characteristics

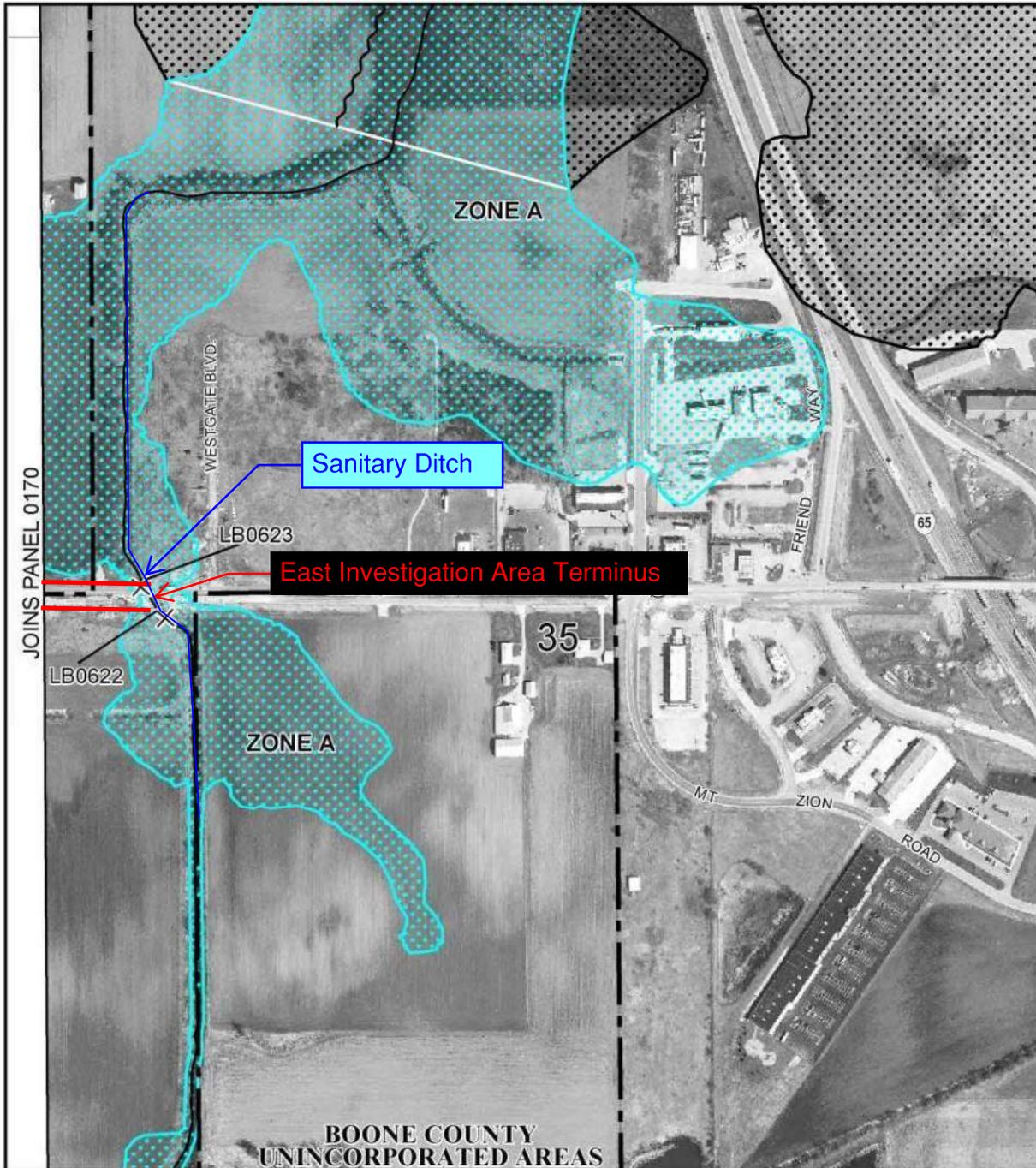
Parameter Code	Parameter Description	Value	Unit
CONDA	Area that contributes flow to a point on a stream	2.272	square miles
DRNAREA	Area that drains to a point on a stream	2.272	square miles
K2INDNR	Average hydraulic conductivity (ft/d) for the full depth of unconsolidated deposits from InDNR well database.	8	ft per day
T2INDNR	Average transmissivity (ft ² /d) for the full depth of unconsolidated deposits from InDNR well database.	656	square feet per day

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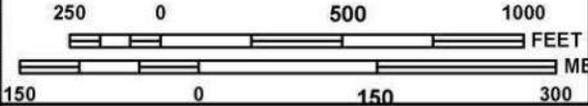
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USGS Product Names Disclaimer: Any use of trade, firm, or product names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

Application Version: 4.5.3
 StreamStats Services Version: 1.2.22
 NSS Services Version: 2.1.2



MAP SCALE 1" = 500'



NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0186E

FIRM
FLOOD INSURANCE RATE MAP
BOONE COUNTY,
INDIANA
AND INCORPORATED AREAS

PANEL 186 OF 375
 (SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS

COMMUNITY	NUMBER	PANEL	SUFFIX
BOONE COUNTY	180011	0186	E
LEBANON, CITY OF	180013	0186	E

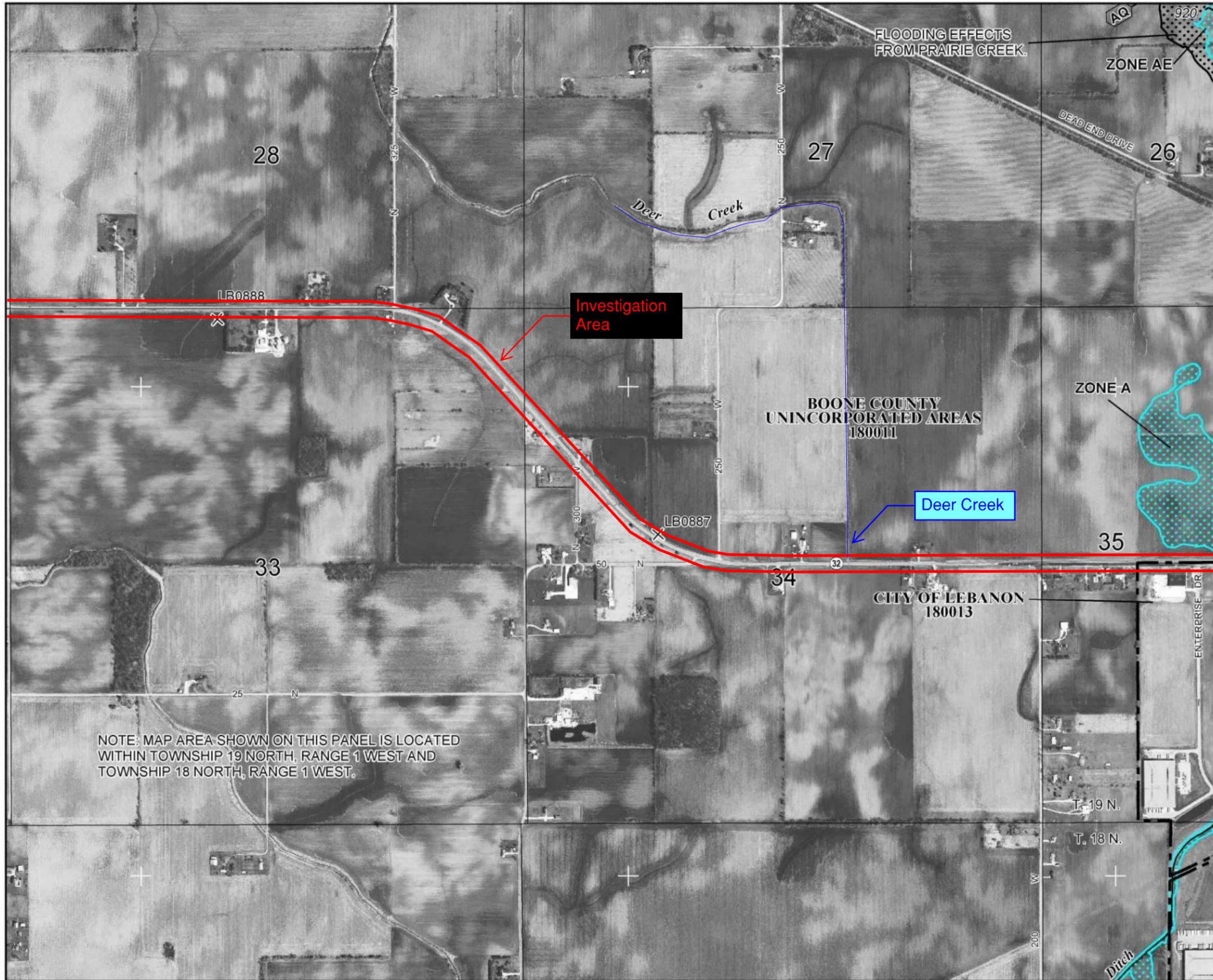
Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.



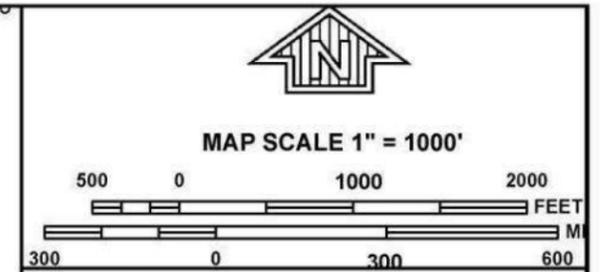
MAP NUMBER
 18011C0186E
EFFECTIVE DATE
 JANUARY 18, 2012

Federal Emergency Management Agency

This is an official FIRMette showing a portion of the above-referenced flood map created from the MSC FIRMette Web tool. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For additional information about how to make sure the map is current, please see the Flood Hazard Mapping Updates Overview Fact Sheet available on the FEMA Flood Map Service Center home page at <https://msc.fema.gov>.



NOTE: MAP AREA SHOWN ON THIS PANEL IS LOCATED WITHIN TOWNSHIP 19 NORTH, RANGE 1 WEST AND TOWNSHIP 18 NORTH, RANGE 1 WEST.



NFIP

PANEL 0170E

FIRM

FLOOD INSURANCE RATE MAP

BOONE COUNTY, INDIANA AND INCORPORATED AREAS

PANEL 170 OF 375
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BOONE COUNTY	180011	0170	E
LEBANON, CITY OF	180013	0170	E

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
18011C0170E

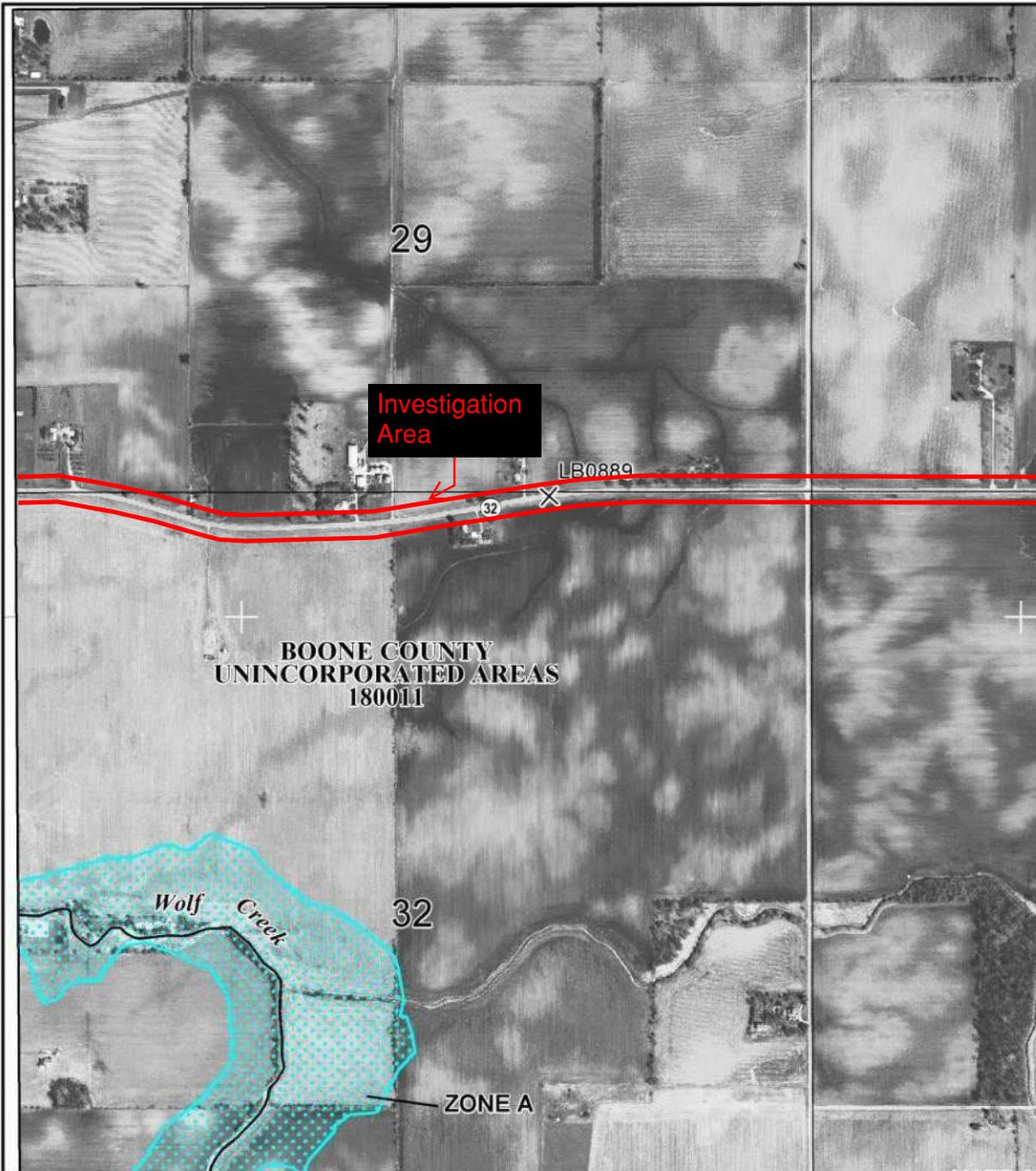
EFFECTIVE DATE
JANUARY 18, 2012

Federal Emergency Management Agency

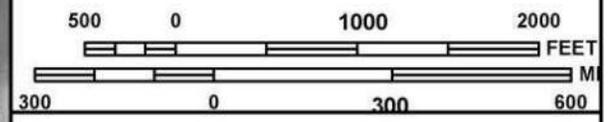
NATIONAL FLOOD INSURANCE PROGRAM

JOINS PANEL 0186

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MAP SCALE 1" = 1000'



NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0170E

FIRM
FLOOD INSURANCE RATE MAP
BOONE COUNTY,
INDIANA
AND INCORPORATED AREAS

PANEL 170 OF 375
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BOONE COUNTY	180011	0170	E
LEBANON, CITY OF	180013	0170	E

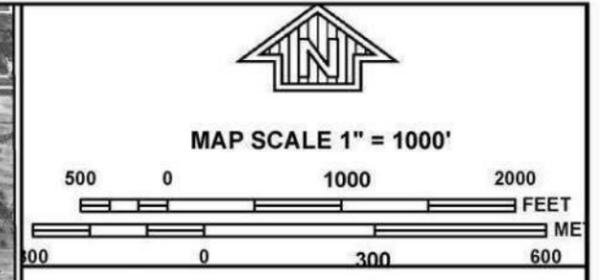
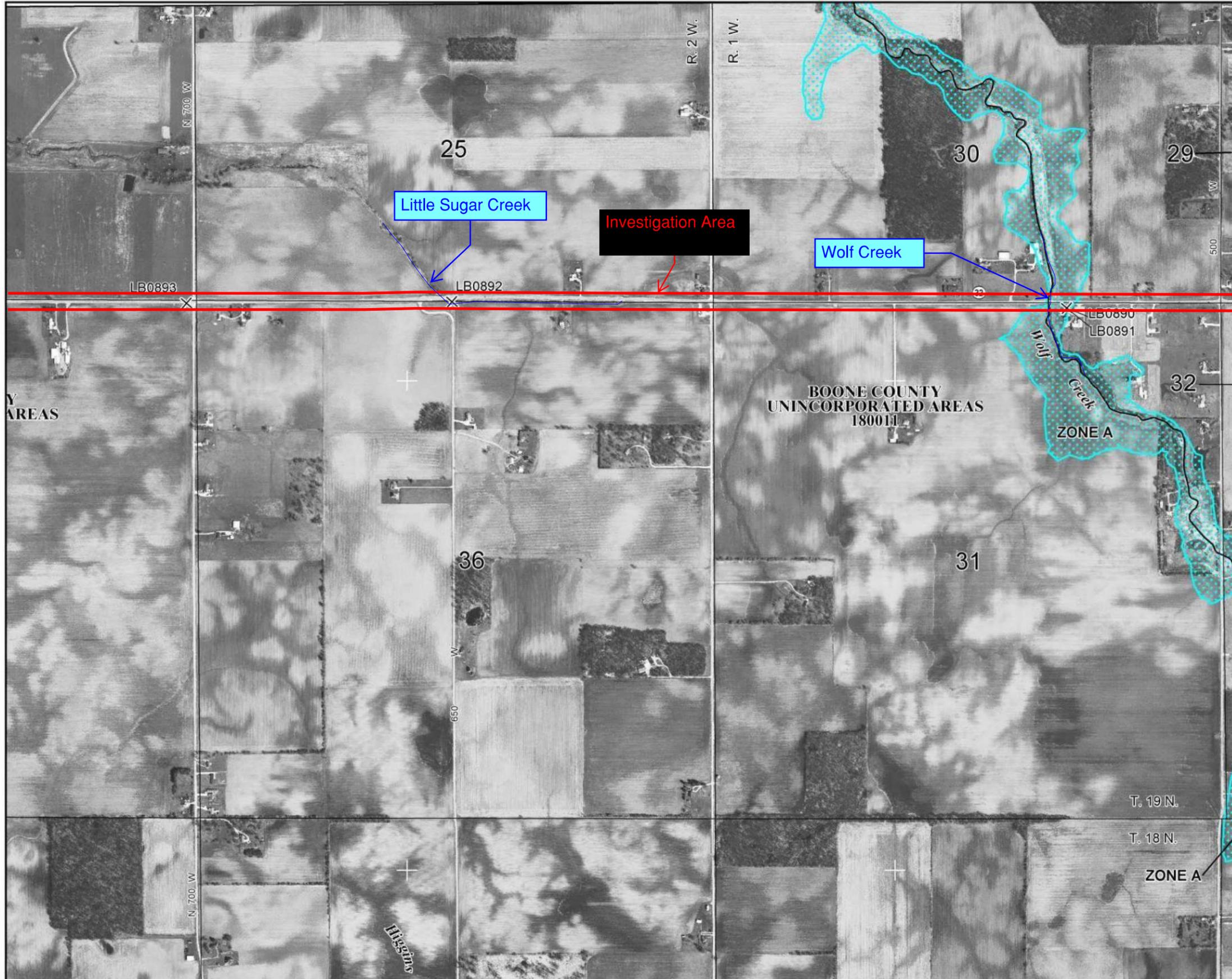
Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.



MAP NUMBER
18011C0170E
EFFECTIVE DATE
JANUARY 18, 2012

Federal Emergency Management Agency

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PANEL 0165E

FIRM
FLOOD INSURANCE RATE MAP
BOONE COUNTY,
INDIANA
AND INCORPORATED AREAS

PANEL 165 OF 375
 (SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

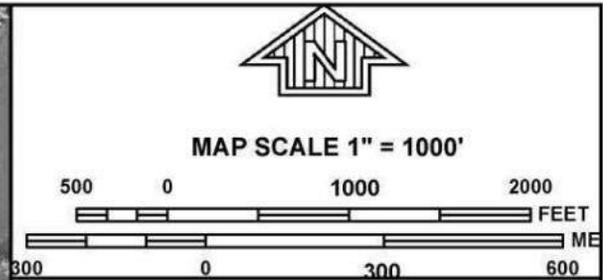
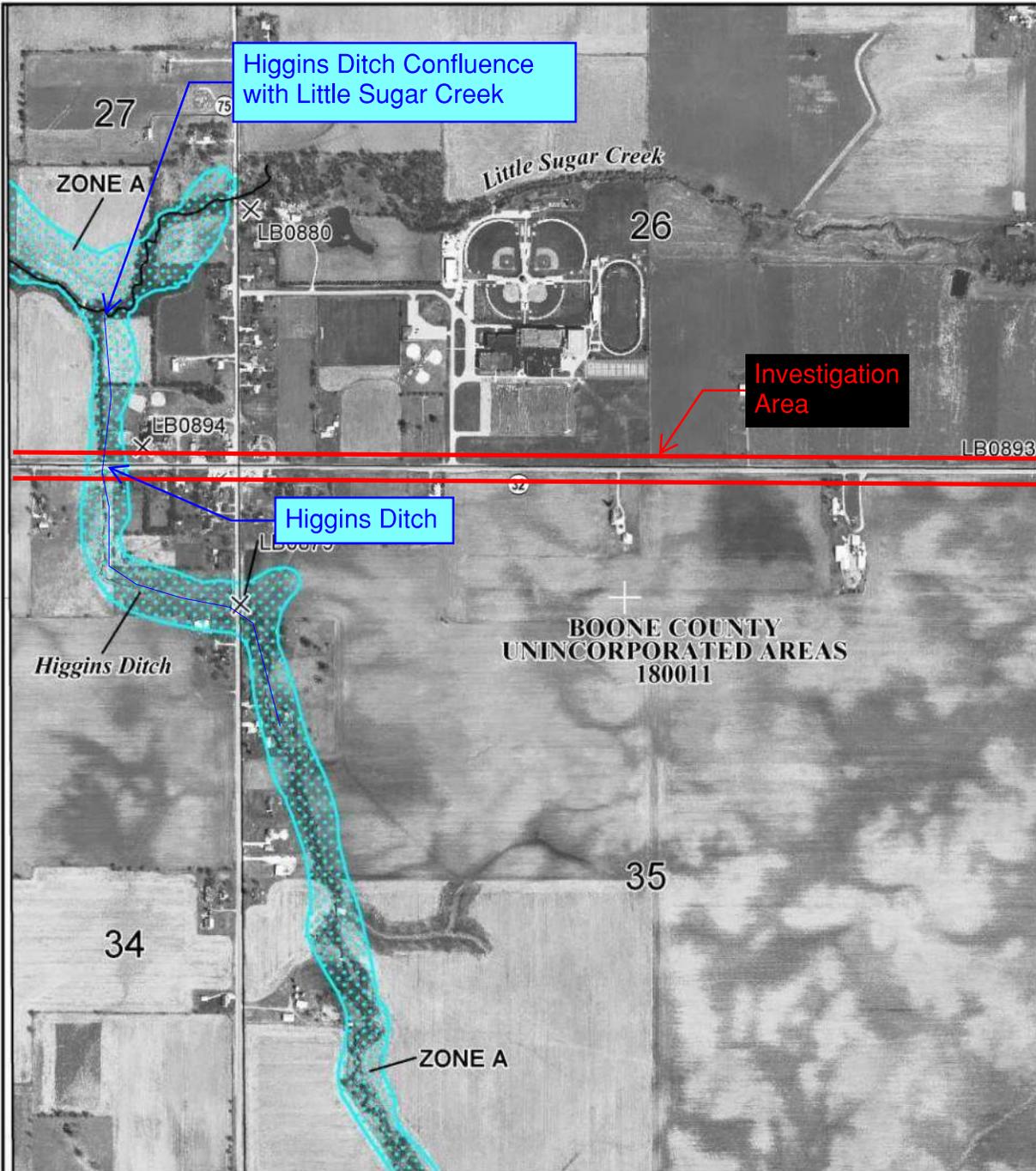
COMMUNITY	NUMBER	PANEL	SUFFIX
ADVANCE, TOWN OF	180012	0165	E
BOONE COUNTY	180011	0165	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
18011C0165E
EFFECTIVE DATE
JANUARY 18, 2012

Federal Emergency Management Agency

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NFP

PANEL 0165E

FIRM
FLOOD INSURANCE RATE MAP
BOONE COUNTY, INDIANA
AND INCORPORATED AREAS

PANEL 165 OF 375
 (SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ADVANCE, TOWN OF	180012	0165	E
BOONE COUNTY	180011	0165	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
 18011C0165E
EFFECTIVE DATE
 JANUARY 18, 2012


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